

NOKIA GOES
METAL WITH THE
LUMIA 925

ARMOUR39'S
ELITE ATHLETIC
QUANTIFICATION

PLUS: Q&A WITH HTC'S
CREATIVE DIRECTOR
DANIEL HUNDT

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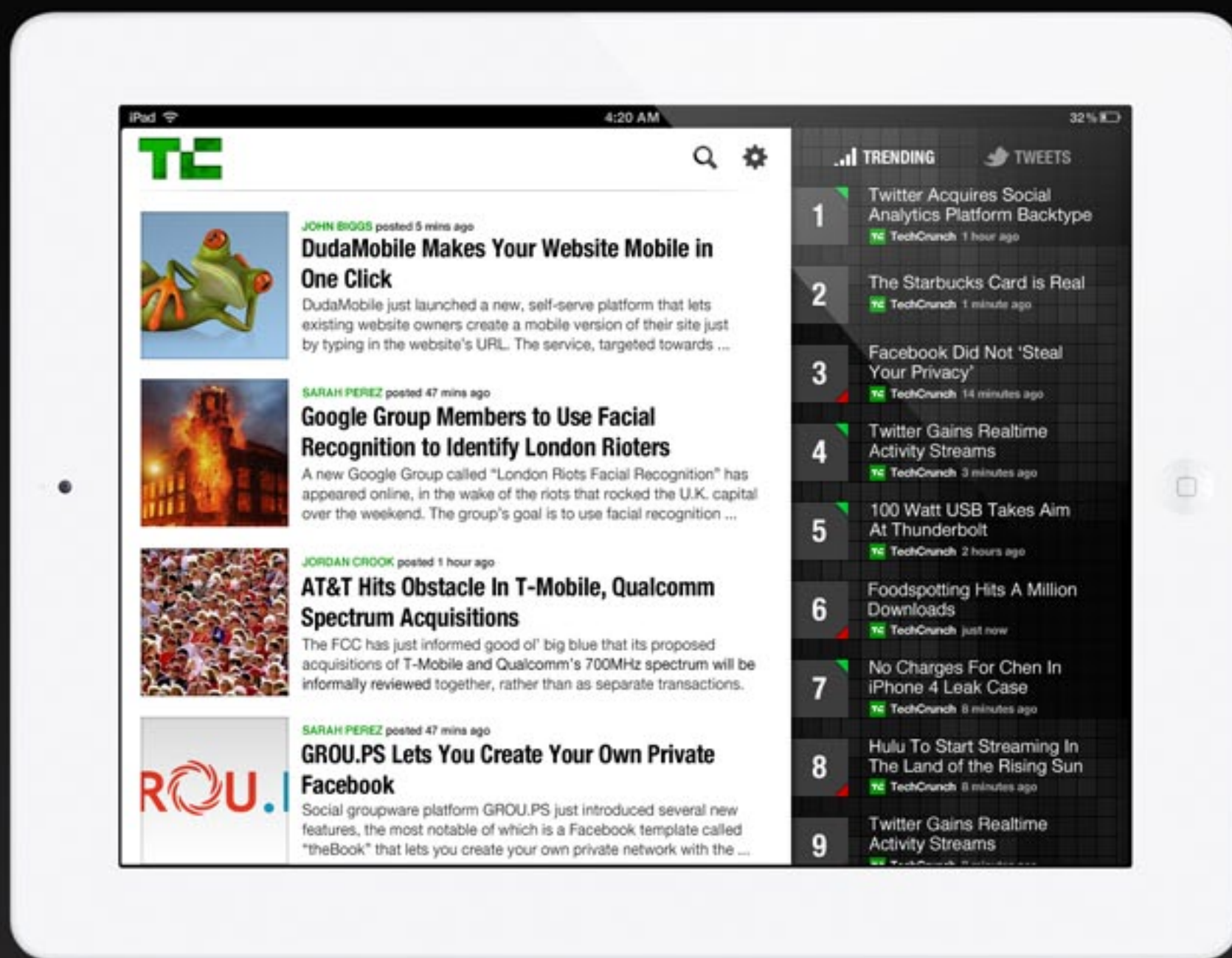
OUT OF SIGHT

PRIMESENSE'S 3D SENSOR
BROUGHT THE KINECT TO LIFE.
NOW ITS CREATORS WANT
TO MAKE TECHNOLOGY
DISAPPEAR.



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ISSUE 96

DISTRO

06.21.13

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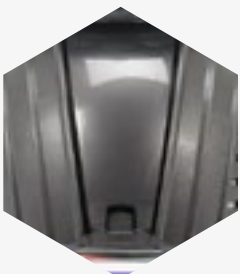
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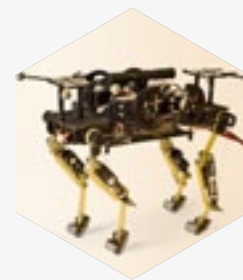
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REHASHED
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TM

TIME MACHINES
Control Freak

On the Cover:
Photo by
Ronen Goldman for Distro



MICROSOFT BACKTRACKS, BUT IS IT TOO LATE?

DISTRO
06.21.13

EDITOR'S
LETTER



IT'S NOT TOO OFTEN THAT we call a tech news story stunning, but that seems like an apt description for our reaction when Microsoft decided to pull an abrupt about-face and nix its controversial rights management for the Xbox One. We learned at the Seattle launch event that the system would have to call home once every 24 hours or every game installed from a disc would be disabled — even if you had the disc in the drive — and quickly the rumblings from the gamers started. They grew louder at E3 when Microsoft detailed the system's DRM, a stream of complaints that quickly reached deafening levels on online forums and the like.

Yet, through all that, Microsoft stayed true to the party line, that the advantages of this system (being able to digitally share games, being able to change games without having to swap discs, etc.) outweighed the overwhelmingly negative reaction brewing among online gamers. That corporate message seemed to get bitter at times,

weary at others, but never showed a sign of changing. Until, suddenly, a complete about-face this week.

No longer will there be any on-line restriction for playing disc-based games, nor any activation, nor any procedure required to sell or trade games. But, as we feared and confirmed when we spoke with Xbox product chief Marc



“No longer will there be any online restriction for playing disc-based games, nor any activation, nor any procedure required to sell or trade games ... this also means a lot of cool, next gen functionality is out the window.”

Whitten, this also means a lot of cool, next-gen functionality is out the window. So, no more disc-less game swapping, no more letting your friends digitally borrow your games and no more instantly downloading your entire library to a new console.

To me, this hugely abrupt change feels like Microsoft deciding that if you don't like its rules, then it's going to take its ball and go home. I'd hoped Microsoft would dial back the checks from every 24 hours to once a week or even once a month. Instead, the company just nuked the entire concept. Microsoft should have seen the writing on the wall and adjusted before E3, but now, it's too late to satiate the ire of many gamers. They'll forget, eventually, but this is a huge misstep when Microsoft really needed to be racking up the pre-orders.

But enough about Xbox, there are plenty of other devices to talk about this week, most coming courtesy of Samsung. The company launched not one, but two new Galaxy Camera spi-

noffs, the first being the Galaxy S 4 Zoom, which is, as you might expect, a Galaxy S 4 with a zoom lens on the back. For those who need a bit more glass, there's the Galaxy NX, an Android-powered, 20-megapixel camera with an interchangeable lens and an LTE connection. The 18-55mm kit lens and giant touch screen on the back, plus a viewfinder, makes for an intriguing device that I can't wait to try out.

The company also threw a series of other machines, phones and tablets at us, but the other standouts in my eye are the ATIV Book 9 Plus and Lite. This is a rebrand of the Series 9 Ultrabook that wowed us last year, and the Plus, at least, will be packing Intel Haswell power, with a promised 12 hours of battery life. That should match the longevity of the MacBook Air, then, but you can be sure we'll be testing to find out ourselves.

HTC announced the Butterfly s, choosing to go lower-case just to make it look like we've written a typo every time we mention it. The 5-inch, 1080p






“HTC announced the Butterfly s, choosing to go lower-case just to make it look like we’ve written a typo every time we mention it.”

device has a 1.9GHz quad-core Snapdragon 600 processor, huge 3,200mAh battery and an UltraPixel sensor. We’re not likely to see this model in the US, but perhaps a variant with DNA branding will find its way here.

Speaking of Snapdragon, we got to spend some quality time with some prototype Snapdragon 800 devices, putting them through their paces. We threw every benchmark we could think of at the things and they performed amazingly on each and every one. Suffice to say, I want this in my phone now.

Finally, the good folks at MakerBot got acquired this week, with industrial 3D printer maker Stratasys paying \$403 million for the company responsible for kick-starting the homebrew 3D printing scene. Don’t spend it all in one place, Bre.

In this week’s Distro, Nicole Lee has a talk with PrimeSense, the com-

pany that developed the tech behind the original Kinect, about what’s next now that Microsoft has developed its own tech for the successor in the Xbox One. We have reviews of two phones, the Nokia Lumia 925 and the Huawei Ascend W1, and Terrence O’Brien gets sweaty trying out the Under Armour Armour39. We have impressions of Office for iPhone, editorials by Brad Hill, Ross Rubin and Josh Fruhlinger and HTC’s Creative Director Daniel Hundt sits down for Q&A. I hope you enjoy, and know that you can skip to any of Distro’s back issues without having to put the disc in the drive. 



TIM STEVENS
EDITOR-IN-CHIEF,
ENGADGET



COLOR TRIPS, HOLODECK HOLDOUTS AND NINTENDO MAGIC



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to read full threads

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INBOX



THE SUBTEXT OF APPLE'S
WWDC KEYNOTE
ISSUE 95,
JUNE 14TH, 2013

“My favorite part: Phil Schiller, SVP of marketing, threw a spear back at the post-Jobs innovation cynics with the rousing declamation, ‘Can’t innovate anymore my ass!’”

— COREALPHA

THE FIVE P’S OF THE PS4
ISSUE 95,
JUNE 14TH, 2013

“Here’s the real five P’s:

E3 VS. WWDC
ISSUE 95,
JUNE 14TH, 2013

“iOS 7 has a lot of good new features in it and it will no doubt be a more functional OS than ever. ¶ But why did they let Nicki Minaj choose the colour palette? The OS looks like an acid trip the Easter Bunny might have.”

— SUPERIONMAXIMUS

Pow Pow Pow Pow Pow,
take that Xbox One.”

— XJACKONATORX

“You forgot one: the PR. Microsoft is lousy at it, while Sony has it down to a science. E3 was, more than anything else, a display of that difference. Microsoft botched its PR job, failing to adequately explain its new features or

reassure customers that change, though scary, is ultimately good. Sony then took that opportunity and absolutely tore Microsoft’s throat out with an E3 presentation that assured everyone, ‘Nothing’s changing. You are safe with us.’ Microsoft thought E3 would be all about the games. Sony knew better.”

— NATHANZZ



**THE CONSOLE WAR IS
OVER... SORTA**ISSUE 95,
JUNE 14TH, 2013

“‘Winning’ E3 has about as much to do with the eventual success or failure of a console as the current astrological sign.”

— SCOTTBERFIELD**MACBOOK AIR
(13-INCH, MID-2013)**ISSUE 95,
JUNE 14TH, 2013

“It’s a shame it didn’t improve more, but with Haswell and 12 hours of battery life, it’s hard to argue too much this year (for an ultramobile laptop, battery life is king). I’ll definitely take the long battery life over a retina display, touch screen mechanics, or a tablet form factor (I’m looking at you

Surface Pro, 3 hours just doesn’t cut it).”

— JEZZARISKY**THEN THERE WERE THREE**ISSUE 95,
JUNE 14TH, 2013

“The excitement about E3 is back thanks to the upcoming new console gen.”

— ELDELADI**WII U GAMING ROUNDUP**ISSUE 95,
JUNE 14TH, 2013

“Nintendo could lose all 3rd party support and I’d still buy their consoles just for their first party titles. *Mario, Zelda, Donkey Kong, Star Fox, Metroid, Smash Bros* and Co. can keep the company afloat easily.”

— SHADOWGUY

“The new *Donkey Kong Country* better have

Kremlings and Kaptain K. Rool like the SNES versions!”

— ANDG404**VIRTUIX OMNI
VR TREADMILL**ISSUE 95,
JUNE 14TH, 2013

“I’ll take a pass on this. Imma wait for the holo-deck instead.”

— SULBLAZER**EIJI AONUMA**ISSUE 95,
JUNE 14TH, 2013

“For me they are like Disney. They don’t care about graphics or power. They just make magic. I prefer to play *Super Mario* than any other advanced games. Of course new technology is nice, but for a game to be fun, it needs to have a soul, like *Alex Kidd*, old *Sonic*, or *Mario* always had. I really wanna play this new *Mario*, and new *Mario Kart*... I want to play them much more than any PS4 or MS console game.”

— HKIECKBUSCH**XBOX ONE SMARTGLASS**ISSUE 95,
JUNE 14TH, 2013

“What I want to see is in-game information being displayed.”

— LOC.NESS

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EYES-ON

DYSON DC50 ANIMAL

TIDY-UP CYCLONE

When it comes to stellar-looking household cleaning tech, it's no secret that Dyson has the aesthetics department locked down. The company's approach to design remains consistent in the DC50 Animal, an upright that harnesses cyclone power and maneuvers on the iconic Ball roller.

THE DAMAGE: \$500

*Tap for
detail*

CLEANING
TORNADO

THE
DUMP

ROLLER
BALL



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EYES-ON

**DYSON
DC50
ANIMAL**



CLEANING TORNADO

The 2 Tier Radial cyclones
wield cleaning power to
snatch up small particles
when tidying up a flat.



PHOTOGRAPHS BY WILL LIPMAN



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EYES-ON

**DYSON
DC50
ANIMAL**



THE DUMP

A clear, detachable canister and easy-to-open door make cleaning out the DC50 Animal a breeze.



PHOTOGRAPHS BY WILL LIPMAN



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EYES-ON

**DYSON
DC50
ANIMAL**



ROLLER BALL

The DC50 Animal continues Dyson's easy-rolling lineage with the Ball technology that we've seen on a number of its cleaning gadgets.



PHOTOGRAPHS BY WILL LIPMAN



MICROSOFT OFFICE MOBILE FOR iPhone

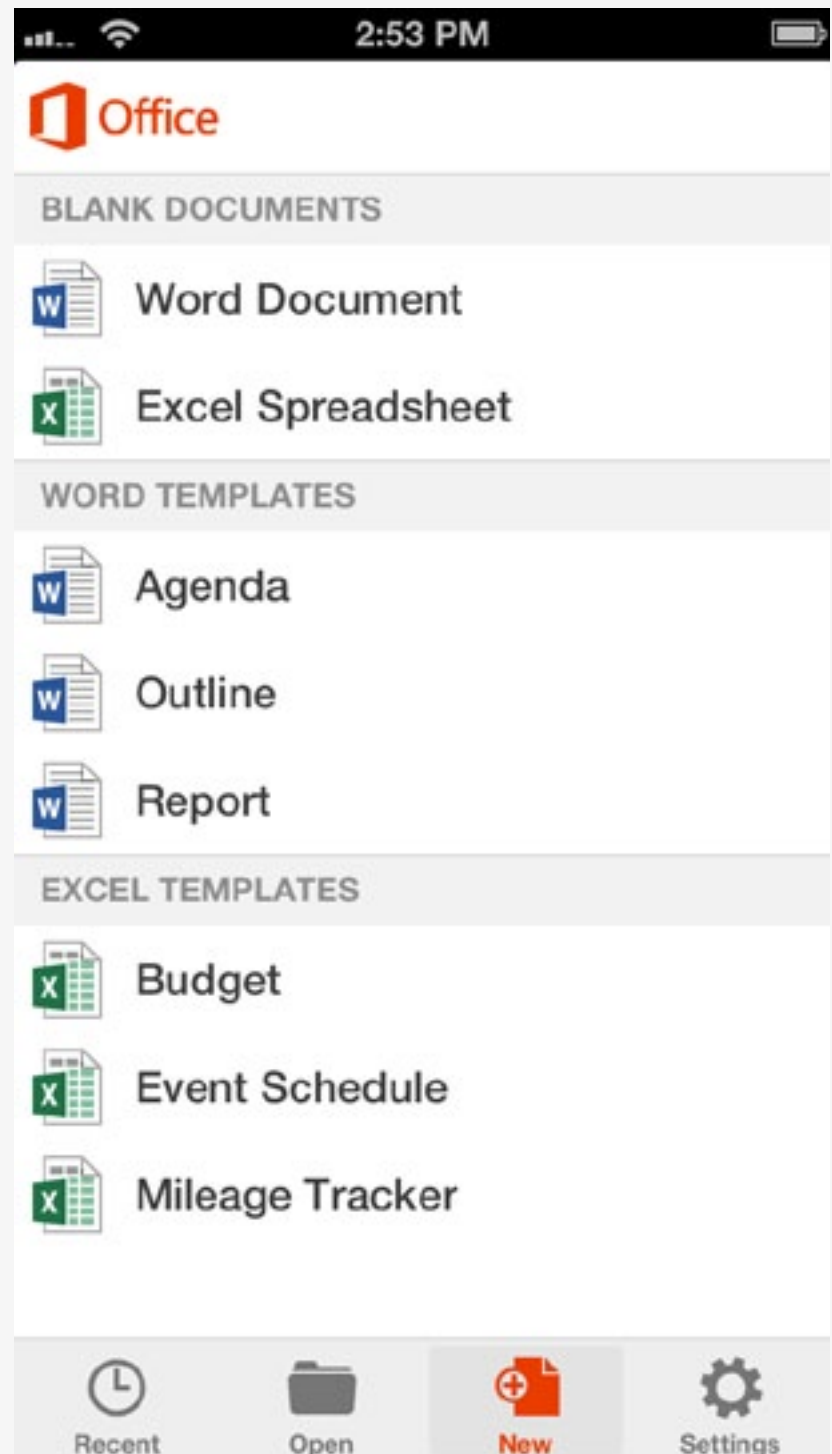


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It wasn't a question of whether Microsoft would release Office for iOS, but *when*. The company just released a free Office Mobile app for the iPhone, and it's available now in the US, as well as several other regions. Before you all go rushing off to the download link, though, there's something you need to know: an Office 365 subscription is required in order to use the app. That's a bummer for people who bought a traditional copy of the suite, or who normally use other word processors, but it makes perfect business sense for Microsoft.

In any event, if you do have a 365 subscription, you'll be delighted to know that the iOS app does not count toward your limit of five PC / Mac installations. Rather, you get to install the application on up to five iPhones, the same way you can put the full suite on up to five computers. Also, in addition to merely viewing whatever Word, PowerPoint and Excel files you already had stored in SkyDrive, you can also make light edits. Additionally, you can create new documents from your phone, though this only applies to Word and Excel, not PowerPoint (understandably so, we think).

By default, the app synced with my SkyDrive account, though you can also add a SharePoint library. Obviously, that's a no-brainer; Microsoft

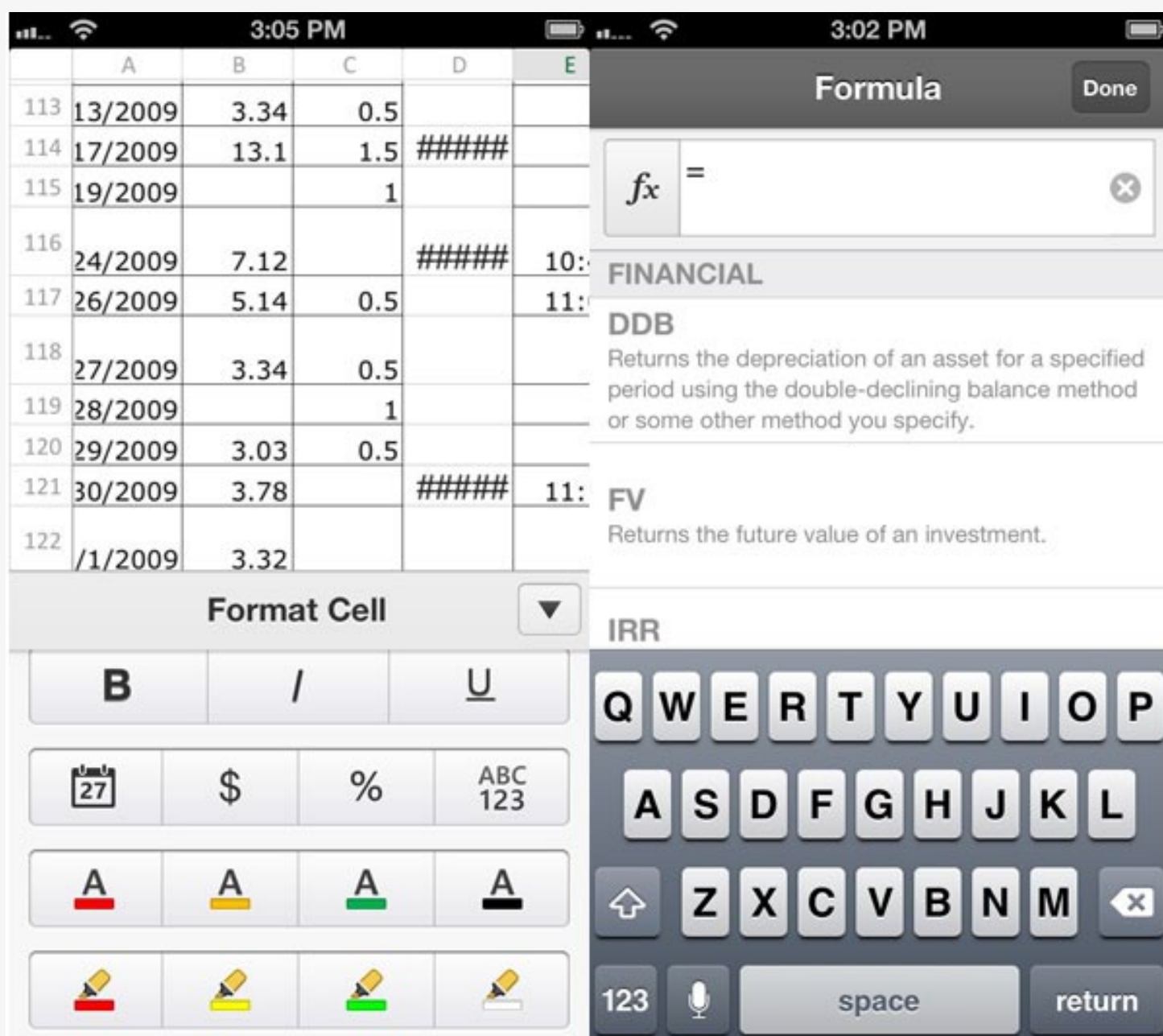


PRICE: INCLUDED WITH OFFICE 365 SUBSCRIPTION

AVAILABILITY: NOW AVAILABLE

THE BREAKDOWN: OFFICE MOBILE REPRESENTS A GOOD-ENOUGH START FOR MICROSOFT, BUT IT'S NOT AN IDEAL OPTION JUST YET.





would integrate Office Mobile with its own SkyDrive service. Though Word, PowerPoint and Excel each offer different features, they generally work the same way. Across the board, you'll find a trio of shortcuts along the top of the screen, including a save button, followed by another for editing. When you're ready to exit the document, tap the back arrow in the upper-left corner. That's all well and good, but there is one thing about the app that feels unintuitive. When you've got the formatting options pulled up at the bottom of the screen, you need to press a down ar-

row to make the formatting menu go away. If you've been using iOS for a while, this one little quirk could take a lot of getting used to.

We can't tell if Microsoft deliberately handicapped Office Mobile for iPhone, or if it's simply saving some features for a later update. We're willing to believe Microsoft still has some unfinished items on its to-do list, but even so, it's a shame that iPhone users waited this long for an Office app, only to get something with such a minimal feature set. Still, it's miles behind other office apps for iOS, including Apple iWork.





HUAWEI ASCEND P6

Well, we can't say that we didn't know it was coming, despite only getting officially announced recently in London. As one leak suggested, the P6 comes with a 4.7-inch LCD display (1,280 x 720), a quad-core K3V2 processor, 2GB of RAM and just 8GB internal storage (there is thankfully a microSD card slot). Camera-wise, reports of a 5-megapixel shooter on the front were on the money, while the rear camera is a shade above that at eight megapixels. The front-facing cam isn't the only talking point, either. At just 6.18mm thick, the Ascend P6 is potentially the slimmest phone out there (for now), but are a trim waist and the promise of improved selfies enough?

Specifications aside, the first thing that grabs you once you have this phone in your mitts is that it's not only light (about 4 oz.), but also extraordinarily slim. Seriously. No one would ever call the HTC One plump, but next to this

PRICE: €449 (\$601)

AVAILABILITY: Q4 2013

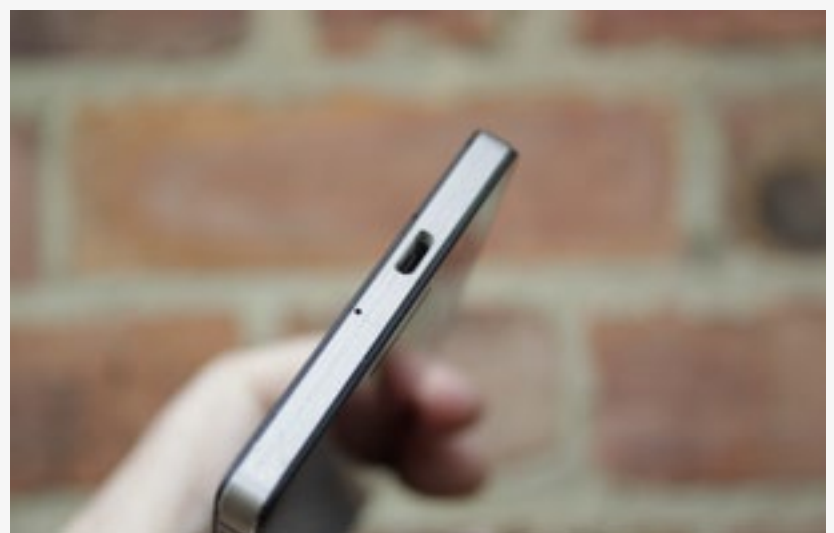
THE BREAKDOWN: HUAWEI GOES ULTRATHIN WITH THE P6.



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thing, it's going to feel like a bit of a porker. Whether you think thin equals beautiful is, of course, a whole other thing. Fortunately, even if the Ascend P6 had required a few more belt notches, it wouldn't matter all that much, as it's a great-looking phone.

Performance-wise, it's the same SoC as the Ascend Mate, which, while boasting 1.5GHz and a quad-core design, is starting to feel a little mid-range compared to the silicon running some of the current competitors. That said, regular usage presented us no problems at all, so we'll just have to wait for the full review before we see how performance truly measures up. In short though, the Ascend P6 is one sharp-looking device that demonstrates that Huawei can do design. It just needs to prove that it's got the performance to back it up, something we will learn soon enough, once it lands in the review lab.



ASTRO-MED TOUGHWRITER COCKPIT PRINTER



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Long-haul airliners like the Boeing Dreamliner and Airbus A340 ship with a ToughWriter flight deck printer installed and ready to go, but the device has been limited to black-and-white output, which can be a bit restrictive when it comes to spitting out charts and weather information. Astro-Med, the company behind the cockpit printer currently churning out reports in thousands of commercial, business and military planes, has a spiffy new model on the way. We spotted an early prototype on display at the Paris Air Show, and while it's still a ways off from being cockpit-ready, the device works quite well, printing to ZINK paper at about 30 seconds per page, compared to five seconds for the monochrome version.

Unlike the printers we're accustomed to using on the ground, a ToughWriter must be installed before an aircraft is certified. It's also an expensive acquisition — it wouldn't be unreasonable to expect pricing in the \$25,000 range, though that detail has yet to be announced. The version we saw in Paris is very much a work in progress — it far exceeds the maximum size allowed, and it's heavier than the targeted 10 pounds, too. It does print quite nicely, though, and once engineers manage to squeeze the printer into a smaller housing, it'll likely include AirPrint, so pilots can print from their iPads, and possibly Android wireless support, too.



PRICE: TBD

AVAILABILITY: TBD

THE BREAKDOWN:
SOON, PILOTS
WILL BE ABLE TO
PRINT FULL-COLOR
CHARTS AND MAPS
FROM INSIDE THE
COCKPIT.



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HANDS-ON



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PRICE: TBD

AVAILABILITY: TBD

THE BREAKDOWN:
AIRBUS' ANSWER TO THE
DREAMLINER GETS A
HIGH-TECH COCKPIT WITH
LOADS OF UPGRADES.

AIRBUS A350 COCKPIT

What's it like to fly the A350? Only a handful of pilots know for sure, but Jean-Michel Roy has a pretty good idea. The Airbus test pilot has flown a variety of yet-to-be-certified aircraft over the years, and he'll soon sit behind the controls of the company's answer to Boeing's Dreamliner, the A350. We were hoping for a test flight opportunity here in Paris, but a delayed rollout meant attendees had to make due with a cockpit mockup serving to satisfy airline execs for now.

As deep-pocketed buyers queued up for a first look at the A350 flight deck, we managed to sneak a quick peek, with Roy on hand to answer questions and provide a video tour. As you might expect, the cockpit is as modern as they come, with large LCDs taking the place



of traditional avionics. In fact, the layout looks more like something you'd find on a stockbroker's desk — it's quite a contrast to the aging panels many commercial pilots still use today. The overhead system controls are presented in a layout similar to what you'll find on an A320 or A330, as is the flight control unit just below the windshield. The screens below, however, are much more accessible, offering up aircraft manuals, charts, checklists, camera feeds, weather information — you name it. A trackball and keyboard make it easy to enter info, while side-mounted joysticks let the pilots control orientation while also serving to create a cleaner look and feel. **D**

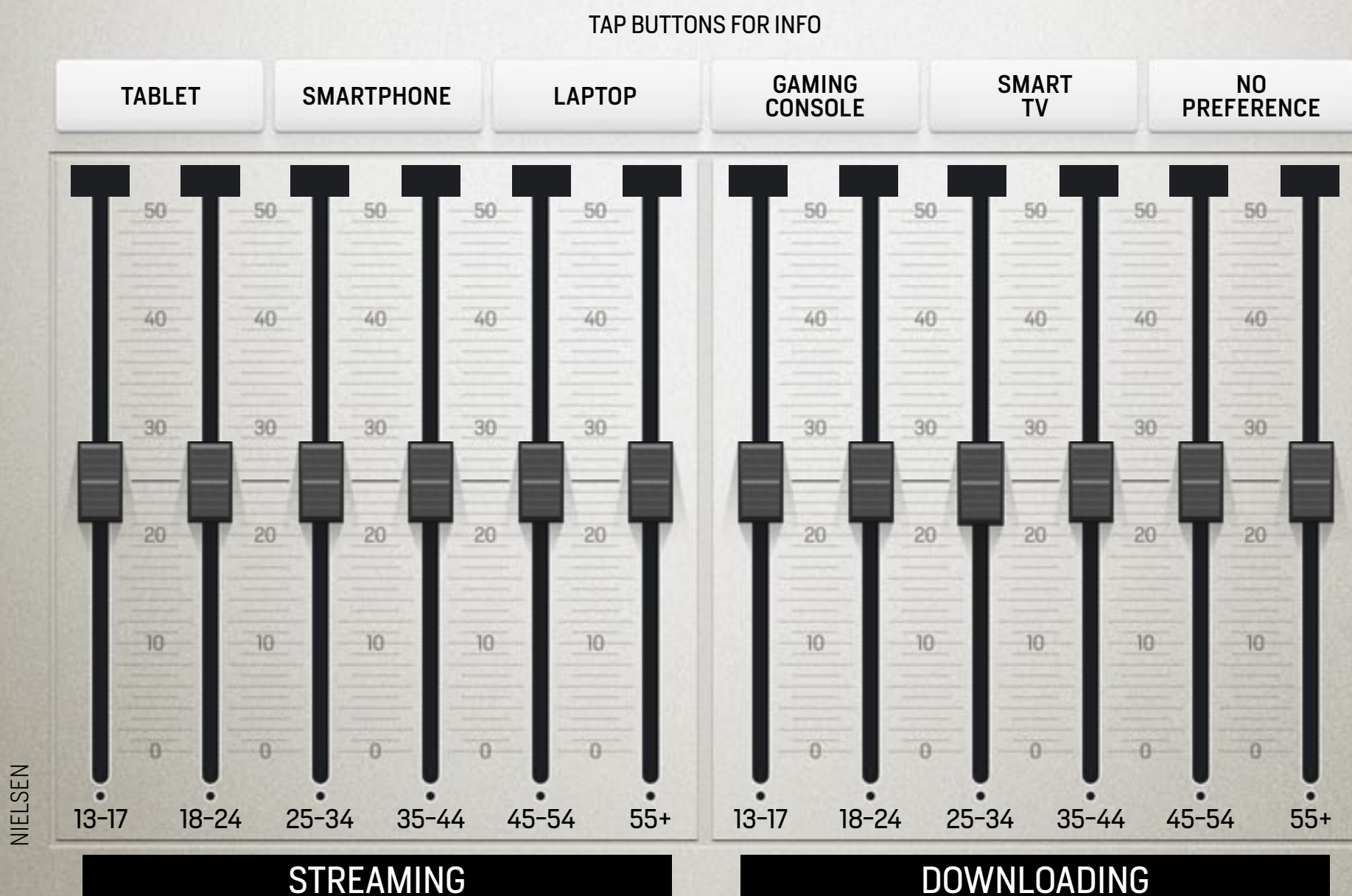


The Choice of a Radio-Streaming Generation

Howard Stern's 2006 move to SiriusXM brought massive publicity to the format, and with the ubiquity of Pandora, Spotify and likely the upcoming iTunes Radio, it seems streaming radio has found its footing. According to Nielsen's latest report, we've streamed nearly 22 billion songs in the US this year, with the vast majority doing so from a smartphone.

Still, those over 55 prefer to chill out by a laptop for their radio play. Game consoles and smart TVs barely rate for radio streaming with any age, seeing only 3 percent or less. As for downloading music, most users opt for laptops to snag files, the largest segment being 47 percent for those ages 18-24, and many of them are likely grabbing Kanye's new album as we speak. — *Jon Turi*

DEVICES BY PERCENTAGE OF PREFERENCE FOR STREAMING AND DOWNLOADING MUSIC IN THE US, BY AGE GROUP



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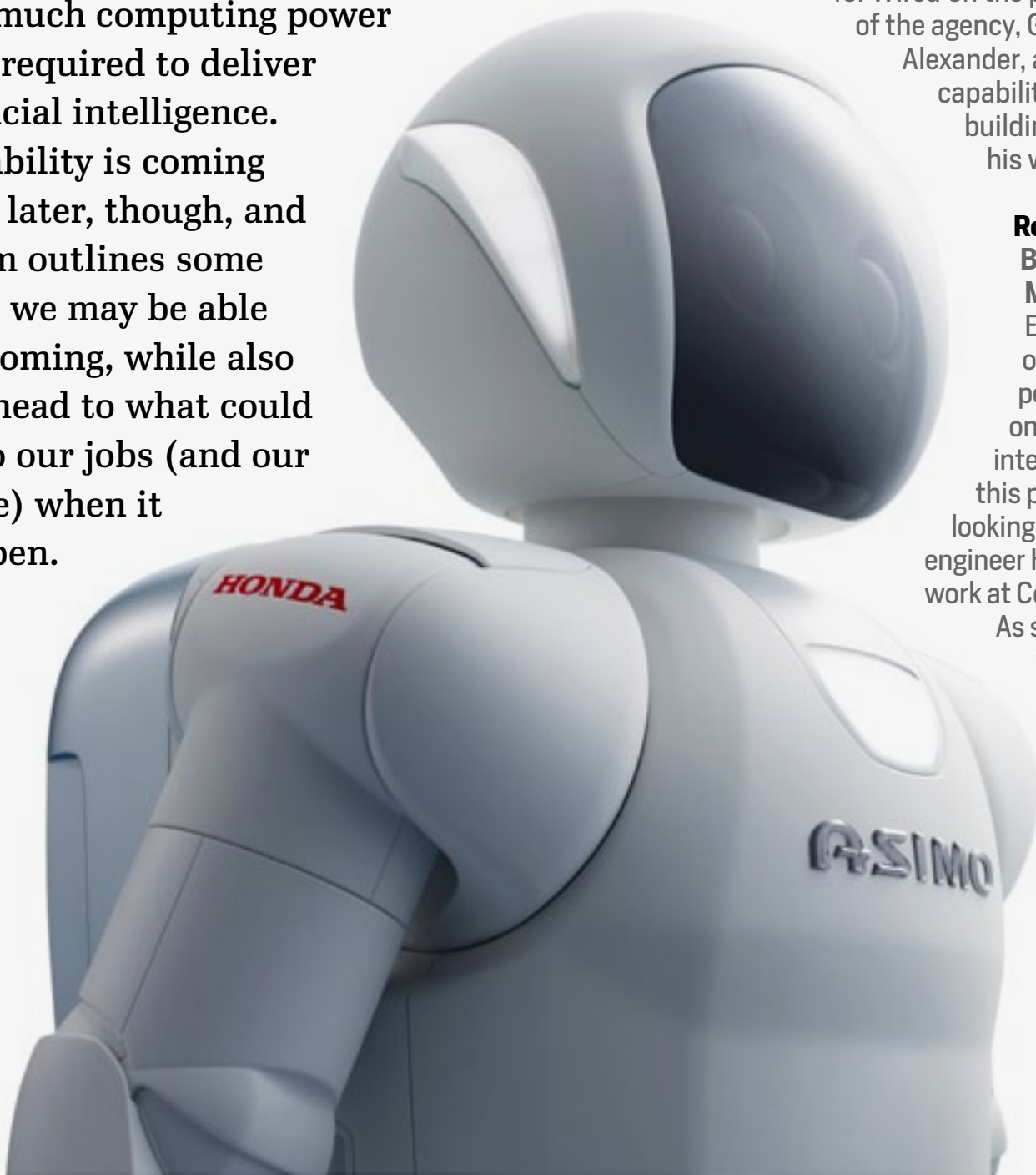


Welcome, Robot Overlords. Please Don't Fire Us?

By Kevin Drum
Mother Jones

Judging by some of the more frequent predictions of recent decades, we'd all have jetpacks and / or flying cars by now, and robots would've taken away many of our jobs. As it happened, though — with some exceptions — most of us are still driving our same old cars to our same old jobs. In this feature story for *Mother Jones*, however, Kevin Drum suggests that those predictions (the latter, at least) may not have been wrong so much as they were misinformed about just how much computing power would be required to deliver true artificial intelligence. That capability is coming sooner or later, though, and here Drum outlines some ways that we may be able to see it coming, while also looking ahead to what could happen to our jobs (and our way of life) when it does happen.

COURTESY OF HONDA



Secret to PRISM Program: Even Bigger Data Seizure

By Stephen Braun, Anne Flaherty, Jack Gillum and Matt Apuzzo, *AP*

There's still much that we don't know about PRISM, but the *AP* has pieced together what we do know, with plenty of additional reporting of its own, in this extensive piece that helps put the secretive program in context — namely, that it's actually a “relatively small part of a much more expansive and intrusive eavesdropping effort.”

The Secret War

By James Bamford, *Wired*

James Bamford has written more about the NSA than just about anyone else, including a *Wired* cover story on its massive data center in Utah last year, and he's now back with another feature for *Wired* on the person in charge of the agency, General Keith Alexander, and the offensive capabilities it's been building under his watch.

Robot Evolution

By Emily Monosson, *Aeon*

Emily Monosson offers another perspective on increasingly intelligent robots in this piece for *Aeon*, looking at robotics engineer Hod Lipson and his work at Cornell University. As she explains, that work has moved from virtual to real-world robots, and is part of a broader effort to study not just robotics and AI, but also evolution itself.



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WHAT INTERNET RADIO NEEDS TO DISRUPT ACTUAL RADIO



EDITORIAL

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06.21.13

FORUM

BY BRAD HILL

I“Internet radio” is usually a misnomer, as well as an indicator of its ambition. The term “radio” is misapplied to internet services like AOL Radio, Rhapsody Radio, the upcoming iTunes Radio and their ilk. All these mediums are unrelated to radio technology. But for most people, “radio” simply means something you turn on and listen to. As a marketing term, “radio” seeks to accustom users to new technology by connecting it with familiar technology. Pandora describes itself as “free, personalized radio.”

The business intent in all cases is more ambitious — to wean people from the terrestrial radio habit and migrate them to online services. Will it work?

It’s not working in a big way yet. According to the Pew Research Center, American use of local AM/FM radio hardly budged between 2001 and 2011 — a period during which online services graduated from web 1.0 to web 2.0, and moved assertively into the mobile space. Of note, 93 percent of American teenagers and adults used traditional

radio in 2011, nearly the percentage of television use (98 percent). During that 10-year span, broadband internet adoption rose from 20 percent to 70 percent, and use of “online radio” (including terrestrial webcasts) rose from 28 percent to 56 percent. So it’s evident that people are dipping their toes into various forms of internet radio without abandoning their terrestrial stations.

Michael Robertson, CEO of DAR.fm and founder of the original MP3.com, recently expressed confidence in the long-awaited migration from passive

“By not separating All Access from Google Play ... Google is merely adding a feature rather than trying to start a movement.”



over-the-air listening to more configurable music streams offered by web / mobile services. “There’s no question that it will change from 10 / 90 (digital / analog) to 90 / 10 because FM cannot compete with the benefits of internet-delivered music.”

Robertson feels that Apple’s recently announced iTunes Radio service, coming this fall to its mobile devices in the iOS 7 upgrade, will accelerate consumer adoption of internet radio. That might be true. When Apple announced and described the service in its WWDC keynote, I tweeted, “As expected, iRadio appears (from the demo) to be completely pedestrian, usual feature set that other services have had for years.” A friend tweeted in response: “and it will eat their lunch.”

That might be true, too. You cannot overestimate the power and adoption clout of a native app on one of the world’s most-used mobile platforms. Google is missing the boat in this regard, with its Play Music All Access

service. By not separating All Access from Google Play, not placing it on the mobile start screen and not giving it a coherent name, Google is merely adding a feature rather than trying to start a movement. Apple’s gambit is also a feature add-on to a wide array of ecosystem attractions, but it’s setting it up for success as a killer app, despite its unoriginal functions.

Apple’s mobile footprint will probably introduce new users to the pleasures of listening to highly personalized music streams. But for the big migration to occur, ease of use is the mountain that internet radio must climb.

Not many entertainment habits are easier or more ingrained than turning on a radio — especially in the car. Pandora’s attainment of 200 million users was assisted by its increased presence in autos. When it comes to radio, mobile means driving. When Pandora struck a deal with Pioneer Corp. to bundle the internet radio service into dashboard navigation systems (this was in 2010),

“Pre-cable television was considerably easier to operate, and free. Now the set is tethered to the wall, operated by a hostile hand-held device bristling with inexplicable controls, and the programs cost a fortune.”




Pandora's co-founder Tim Westergren was quoted as saying, "Maybe a year ago people would have said Pandora is a computer thing. They're beginning to realize that internet radio is an anytime, anywhere thing."

Apple appears to be thinking along the same lines. The single remarkable point in the iTunes Radio announcement was the pending development deals with 12 car companies. There's no information yet on what the integration might look like, but the few seconds in which Apple's slide appeared signaled a clear intent to tie general mobility (iOS devices) to radio mobility (the car).

Media and tech companies can wrench users from one platform to another even when the experience is burdened with some degree of complication, hassle and expense. Pre-cable television was considerably easier to operate, and free. Now the set is tethered to the wall, operated by a hostile hand-held device bristling with inexplicable controls, and the programs cost a fortune. On the plus side, the picture is gorgeous, the channel variety is stunning and all that money sloshing around produces movie-quality shows.

Internet radio has advantages, too, that balance its complications. Subscription tiers eliminate advertising, the noisy bane of commercial AM/FM radio. Personalization features differentiate effectively from the expertly curated genre stations of SiriusXM — the chief in-car challenger to AM/FM.

Competing on the basis of accessibility is fine, and internet radio needs to get easier in both car and home. It also needs star power and blockbuster announcement material. SiriusXM enjoyed immense publicity when Howard Stern moved to that platform from terrestrial radio. Jerry Seinfeld is producing his *Comedians in Cars Getting Coffee* for Crackle, bestowing interest and recognition on that "internet television" service. And look at Netflix, which shifted from its original mission as an innovative DVD-rental outlet to a streaming service, and from there to a content producer. After making waves with its *House of Cards* online-only, binge-watching series, this week, Netflix signed a long-term content-development deal with DreamWorks.

Internet radio lacks all these shades of glamour. Even with its rising popularity, internet radio is geeky. Its image is tethered to computers and smartphones. That is a status quo in which the usage numbers of terrestrial radio remain fairly safe. It is up to Apple, or Google, or Rhapsody, or Spotify, or Pandora, or Amazon, or another internet player to break down the perceptual walls within which internet radio is trapped, developing content or importing stars that will compel users to commit more of their attention to the platform. Technology alone might not be enough to disrupt the nearly 100-year-old technology of terrestrial radio. But technology plus killer content can do it. 



TOUCHY SUBJECTS

DISTRO
06.21.13

FORUM

SWITCHED
ON

BY ROSS RUBIN

IN 2002, THE FIRST LCD-BASED iMac succeeded the translucent PowerPC G3-based models that the original Bondi Blue iMac begat. The new generation was much more striking than the one that had placed Apple on the comeback trail. The iMac G4 mounted the display on a balanced arm similar to a Luxo lamp while the motherboard resided in a hemispherical base. This allowed the display to be adjusted to a wide range of heights and angles and each of the two main sections to be “true to itself.”

Alas, the design had its limits. It's difficult to imagine today's ample 27-inch iMac displays balancing off such a mount. Furthermore, after the switch to Intel, processor thermals improved to help enable the slim iMac of today. The idea of efforts being true to themselves (at least until nearly compromise-free convergence is possible), however, has stayed a hallmark of Apple. For example, the company would resist adding video to the iPod for years after com-

petitors had the feature.

These days, Apple and Microsoft are preaching messages to developers that have much in common: touch, tablets and app stores. However, their central difference comes down to whether the touch experience can be reconciled with the keyboard-and-mouse experience. Apple takes the stance that it cannot while Microsoft says it can, at least transitionally.

But just as Apple learned to bring




“Apple seems determined not to turn the Mac into an iPad or vice versa. Microsoft may be missing opportunities to enhance the traditional desktop experience.”

together the placement of computing and display in the iMac, and video and audio in the iPod, might it one day reconcile the main user interface models of OS X and iOS? Even Steve Jobs once acknowledged the potential as at least an R&D project. But such a move surely wouldn't come any time soon. Tim Cook, referencing the folly of combining a toaster and a refrigerator, has said the company has no plans to make such a converged device. And after the addition of iPad-like full-screen apps and the Launchpad in Lion, Apple seemed to back off a bit on the iPadification of Mac OS in Mountain Lion.

Meanwhile, one need only look at the implementation of the Start button in Windows 8.1 to see that Microsoft is pushing forward on its Modern

touch interface on the PC even as it softens the transition. In contrast, at WWDC Apple showed a resolve to maintain separately optimized interfaces between OS X and iOS. It also focused the former OS on tasks that deal with the kinds of files and information management that are all but alien to the iPad.

Features such as tags, Finder tabs and enhancement of multiple-monitor support to the point where there is now no longer such a thing as a primary display will have great appeal to power users. They show there is a future for the traditional desktop interface, one that — if Apple's rationale for a naming-convention change holds true — the company expects to be around for the next 10 years.

Apple seems determined not to turn the Mac into an iPad or vice versa. Microsoft may be missing opportunities to enhance the traditional desktop experience. On the other hand, the iPad may be caught in the middle of Apple's line in the sand. Features such as Microsoft's expansion of multiple apps sharing a screen in Windows can make a meaningful impact versus an iPad. Perhaps Apple's opening up of multitasking in iOS 7 will serve as a prelude for such future functionality. But it will take years before we will be able to know which company made the right bet in where touch belongs, even if it comes at the expense of desktop precision. 



SEVEN LEVELS OF NERD HIERARCHY



DISTRO
06.21.13

FORUM

THIS IS THE
MODEM WORLD

BY JOSHUA FRUHLINGER

I HAVE A CONFESSION TO MAKE. I love /r/cringe, the sub-Reddit dedicated to those moments usually caught on video that make us feel better about our lots in life when we can watch a 30-second chunk of happenstance and walk away thinking, “I am at least one level of dork above *that* person.”

Back in the day you were either a nerd... or not. There were no levels of dorkiness like we have today. You were into computers and *Dungeons & Dragons* or you weren't: that was pretty much it. You were grouped into a sub-culture that enjoyed all things electronic, idolized Brian Tochi, knew who Steve Wozniak was and could explain why *Weird Science* was not a nerd revenge film, but actually a celebration of giving up the machine for love and conformity shrouded in a Hughesian attempt to finally give the dweebs a chance to get some. Still a cool movie, though, and a righteous theme song.

In the early tech days, things were

pretty binary: nerds vs. cool kids. Sure, there were geeks, sportos, motorheads, dweebs, dorks, buttheads... but they were either cool or not. Nowadays, some nerds are... *cool*. Just this week Jimmy Fallon, the upstart king of late night, is doing something he calls Video Game Week. Imagine, for a moment, Johnny Carson, David Letterman or even Kimmel doing that. They're all too cool. But now... Fallon is cool.

What exactly happened?

It seems, not only as evidenced by /r/cringe, but also by television programming like *The Big Bang Theory* and just about any Greg Mottola movie, there is now a complex nerd hierarchy, and the coolest nerds are free to make



fun of the not-so-cool nerds, and so on. It's a meta thing. It's a bizarre thing, and it's the world we live in.

So with that, here are some of the nerds we love to make fun of.

This list is far from exhaustive and, as subcultures change overnight, probably full of inaccuracies, so I invite your additions and corrections.

1 WEABOOS

These nerds — arguably accurately — look to Japan for inspiration, but take it a little too far and make others a bit uncomfortable. Coiffed like anime characters, they feign Japanese accents and shout words like “kawaii” and “sugoi” at mall meet-ups. Some say, “Nya!” In the end, they're harmless and we'll probably realize they're pretty cool in, say, 20 or so years. Weaboos are made fun of by all nerds regardless of rank. Bottom of the food chain. Noobs who will most likely graduate to another level of nerdiness.

2 LARPERS

When the “Lightning Bolt!” video first graced the intertubes in the early 2000s, it made millions of nerds worldwide feel better about their own predilections. LARP stands for Live-Action Role Playing, by the way, and it's the act of taking the fantasy out of RPGs and acting it out IRL. LARPing is nothing new — one could argue that Civil War re-enactments are LARP events. Either way, LARPers, when going to the ex-

treme of taking paper balls and throwing them at fellow players as lightning-bolt vehicles, are among the nerds we other nerds love to make fun of.

3 MODERN GOTHS

To be fair, goths were always pretty nerdy, what with their antisocial behavior and deep interest in times of yore that often led to uncomfortable Bram Stoker pseudo accents. But the goths of today have split into micro-factions from mall goths to cyberpunks to steampunks to others I'm not about to even try to parse at the risk of being called out as a poseur. But that's just it, isn't it? They take themselves way too seriously, and the rest of us are aware of this and find it kind of funny. Just last month I was at Disneyland when I noticed that hundreds — nay, thousands — of visitors were dressed in what could only be described as Hara-juku 2004. I was confused, asked one what was up and was informed that it was “Bat's Day.” Go figure. I love goths

“Weird Science was not a nerd revenge film, but actually a celebration of giving up the machine for love and conformity...”



— you keep the Bauhaus and Siouxsie dream alive — but some of us other nerds are making fun of you.

4 IT GUYS

There's a show about them. We all see them in our offices and universities. They have long hair. They have weird beer guts. They love .net and Azure. They think Apple is child's play. Fallon captured Nick Burns the IT guy on *SNL* brilliantly and probably launched his nerd-friendly career leading us all to Video Game Week. We dare not make fun of IT guy lest he not help us the next time we forget our passwords. We love you, IT guy. Your hair is awesome and you're smarter than us. MOOOOVE!

5 GAMERS

Somehow, video gamers have sauntered almost all the way to the top


“We dare not make fun of IT guy lest he not help us the next time we forget our passwords ... Your hair is awesome and you're smarter than us. MOOOOVE!”

of the nerd heap. Back in the day, gamers were snot-nosed arcade dwellers who smelled of Jolt Cola and vitamins. But today, they're cultural critics who appear on television, run respectable publications and pundit their way into social discourse, always reminding us that the video game industry is now bigger than Hollywood. Good on them, but at the end of the day you're still sitting in your jammies playing games. Boom! (I play all the time, by the way.)

6 BLOGGERS

A long, long time ago, the more opportunistic nerds realized that they had a platform called the internet and they went forth upon the packets and scribbled words about technology that were delivered to legions of lesser nerds and came unto them as prophets of the technologies. The other nerds saw this and it was good and raised their cell-phones and controllers in toast and said, “Hail, the prophet bloggers who bring us news of the smartphone! We love to hate them!” And so it was. Hashtag.

7 THE PROPHETS

Jobs, Gates, Berners-Lee, Miyamoto, Sagan, Hawking. Alive or dead, they can do no wrong. While we may poke fun, we never deny their impact, and we thank them for our daily tech. Or not. Maybe we hated what Jobs did with Apple in the '90s and think that Gates should take over Microsoft again to get them back on track. Hello, Xbox One, Bill? 



REVIEW

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Under Armour
Armour39



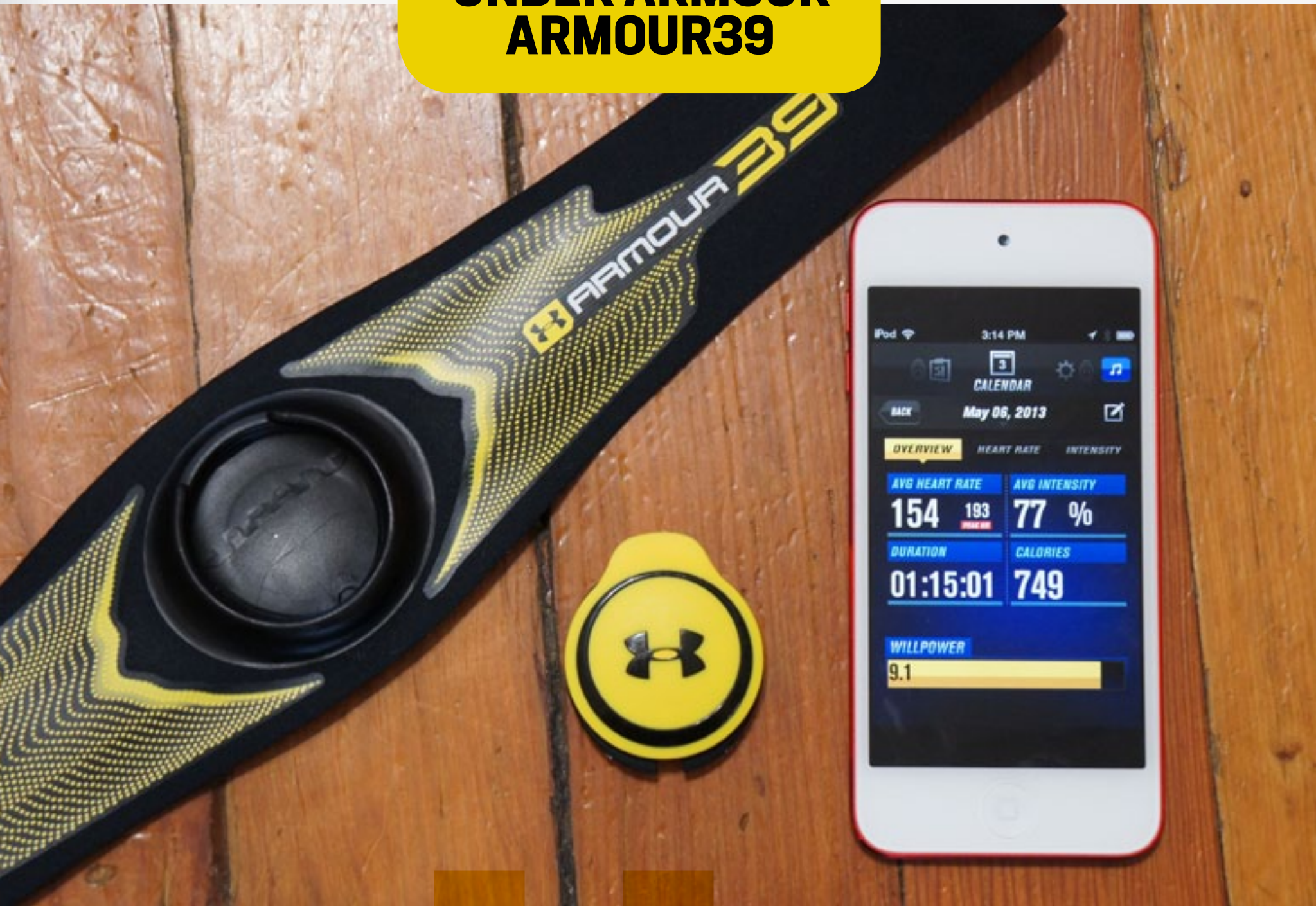
Huawei Ascend
W1



Nokia Lumia
925



UNDER ARMOUR ARMOUR39



Does **Armour39** put its athletic pedigree to good use or does it further cloud fitness-tracking gadget options?
By **Terrence O'Brien**

Under Armour has always prided itself on the science and technology that goes into its sports apparel. But, let's be honest, the company could spend four times as much on R&D for a shirt as HTC did on the One, and it would still never generate the same fanfare. Sure, a heart rate monitor and app still aren't going to set the tech blog world on fire, but it could be the move that earns the company the respect it deserves. The Armour39 system combines a small Bluetooth LE-enabled pod with a distinctive chest strap and an app that tracks your level



of exertion, awarding you WILLpower points. What the system isn't, however, is a "lifestyle" product or an "activity tracker." Under Armour is clearly going after those who fancy themselves athletes. Obviously, the question is whether or not the sportswear company has anything valuable to offer in the space. Does its new training platform actually encourage you to push yourself harder and is it really anything more than a FuelBand with an extra dose of testosterone?

HARDWARE

Interestingly, as a heart rate monitor, the Armour39 strap and pod aren't really meant to be seen, yet they still sport a rather unique appearance. Instead of sticking with the one-piece, all-black design that companies like Polar favor, Under Armour laced its strip of elastic with aggressive yellow accents. Waves of yellow emanate from the black plastic well at the center where the data-tracking bug lives. The band is little more than a strip of elastic, but the sensor-laced pads are much softer than those on models from other companies. It's a small touch, but one that lends the product a dash of luxury. And we'll be honest; "luxury" is not a word we ever thought we'd associate with a heart rate monitor. Our one gripe about the design is the closure, which has you slipping a loop of elastic around one end of a plastic hook. The problem is that hook sits far over to one

The "bug" resides on your torso for workout stat counts.



side, making it awkward to reach. Its placement also pushes the slide to adjust the size of the strap around to the back. That means you'll be doing a lot of twisting and turning to ensure you've got the right fit, especially since it can be quite stiff the first few times you put it on.

The "bug," which actually houses the tracking hardware, along with the Bluetooth radio, a small amount of storage and a watch-style battery, is also bright yellow with the signature U and A logo emblazoned on it. That logo hides a small LED that glows blue when attempting to connect to the iOS app and slowly pulses green to let you know everything is good to go. Orientation sensors determine how stressful a particular position is, so it can differentiate between running on a treadmill and doing planks. The onboard



memory also means that you can put your phone down and walk away while exercising and still keep tracking. When you wander back into Bluetooth range, your progress will automatically be updated. A tab on one end ensures that you'll insert it correctly and makes it relatively easy to pop out of the strap. There is a bit of resistance as you try to pry it free, which is actually reassuring since you don't want it to come loose as you're sprinting or doing burpees.

SOFTWARE

Under Armour assures us that an Android app is in the works, but wouldn't specify when we could actually expect a release. For now you'll need an iOS device, one with Bluetooth 4.0 specifically. Either that or you'll need to get your hands on the companion watch, which is not yet available and offers only some of the functionality that the app does. That being said, the Armour39 app isn't exactly drowning in superfluous features. It does one thing: monitor your level of exertion, and it does it relatively well. Still, whether or not its busy blue-and-yellow interface conveys that data in the most efficient way possible is up for debate. And we're both confused and frustrated by the fact that it's not optimized for the longer screen of the iPhone 5 or latest-generation iPod touch.

The first step in getting your new fitness-tracking system up and running is to use the guided-assessment

Armour39 feels like the genesis of a great product, rather than the culmination of a long R&D process.

tool. The 10-minute program (for which you'll need a treadmill or a track) is hosted by Todd Durkin, the owner of Fitness Quest 10, a high-end gym in San Diego where a number of professional athletes



Right now, iOS users are the only ones with software.



train, including Cy Young award-winner Jake Peavy and Olympic gold medalist Shaun White. The way it works is quite simple: you start cold then slowly ramp up the intensity of your run to get a measure of your resting and maximum heart rate, while the app monitors how quickly it climbs. Then, at the end, you're directed to come to a complete stop while a final set of measurements determines how quickly you recover from high levels of exertion.

This data, along with some other general information about you, helps the app generate a profile that will be used to measure your WILLpower. Under Armour's WILLpower is a proprietary measurement, like Fuel points, of your overall effort. Your heart rate and the duration of your workout both influence your score, but so too does the position of your body. WILLpower is awarded on a scale of zero to 10, with it becoming increasingly harder to rack up points as you climb higher. So, you'll hit 3.5 pretty quickly, but getting to nine is going to be a pain. (Literally, you're probably going to be in pain if you push hard enough to be awarded nine WILLpower points.)

There's not much else to the app, how-

ever. You take the assessment, then start working out. You can set a WILLpower target, but that's about it as far as advanced features go. At the end of your session you're presented with a workout summary that gives you not just a WILLpower score, but also your average and peak heart rate, your average intensity, duration of your workout and the number of calories burned. Additional tabs break down your heart rate and intensity over time in bar-graph form. The data is great for number nerds, but there isn't much you can do with it. Armour39 has no social aspects and, despite your workouts being synced online, there is no robust web app for digging deeper into your results. In fact, you can't even just use the app to quickly check your resting heart rate or delete a workout. You've got to connect the bug and initiate a workout before the app will spit any data out at you.

The Armour39 tabulates WILLpower for scoring.



WRAP-UP

Like Nike+, Fitbit or Jawbone Up, Armour39 is meant to motivate you by quantifying your activities. The difference is, Under Armour isn't pitting you against anyone but yourself. WILLpower isn't meant to impress your friends and the system isn't intended for people who like to brag to their buddies about how fit they are. It's a way for someone who considers themselves an athlete to attach a score to their level of effort at the gym. Obviously, the effectiveness of the WILLpower system will depend on the particular user. For someone like me, who couldn't care less about how many steps he takes, but does want to know if he's really pushing himself as hard as he can on a run, Armour39 works well. However, if you're looking for something that's going to count your calories and monitor your overall level of activity, Under Armour has nothing to offer you.

The problems begin with the price

tag: \$150 is exceptionally expensive for a heart rate monitor, even one with some advanced hardware features. If the accompanying software were mature and robust, we might be a little more forgiving of the price. Being limited to newer iOS devices is already a significant knock against Armour39, and the fact that the app isn't even properly optimized for the latest generation of Apple handsets (which were already five months old at the time of its announcement) gives us serious pause. Ultimately, Armour39 feels like the genesis of a great product, rather than the culmination of a long R&D process. The company has identified a gap in the market, with a potentially large consumer base, but the combination of price, limited compatibility and a basic feature set undermine its chances of success. **D**

Terrence is too complicated and multifaceted to be reduced to pithy one liners. He's also kind of a jerk.

BOTTOMLINE

ARMOUR39

\$150



PROS

- Supremely comfortable strap
- App is simple and intuitive
- Tons of data to peruse

CONS

- iOS only, for now
- App lacks polish and functionality
- No website or social features

BOTTOMLINE

The Armour39 exercise tracker is a solid self-quantifier for those that consider themselves athletes. But we wish the app had more features and polish.



HUAWEI ASCEND W1



Huawei's **Ascend W1** hits the WP8 scene as a budget-minded, yet decently powerful handset for users with modest expectations
By Daniel Cooper

When Microsoft announced its hardware partners for Windows Phone 8, we were surprised that there was no mention of Huawei. You see, in the lead-up to the event, we'd seen enough evidence to be sure that the Chinese outfit would become the fourth phone maker to join Nokia, Samsung and HTC. When the Ascend W1 debuted later at CES, Huawei made no great effort to explain the delay, but with the vehement political opposition it's currently facing in the US, perhaps it had cold feet. Now, several months down the line, we have our first chance



to put the Ascend W1, its first Windows Phone 8 device, through its paces.

With a £130 off-contract price on O2 UK (or \$230 at Walmart in the US) and a spec sheet that screams “2011,” it’s clear that Huawei’s aiming this at the same audience as Nokia’s lowest-priced Lumias, the 520 and 620. That puts it squarely in the reach of smartphone virgins, the “price sensitive” and those looking to dip a toe into Windows Phone’s hot tub with more of a secondary handset. But should the W1 be the device new users pick to be their entry point into Microsoft’s mobile world, or will we once again say that it’s the Lumia 620 that deserves your hard-earned cash?

HARDWARE

There’s a fine line between light and insubstantial, and despite being eight grams heavier than the iPhone 5, it’s the Ascend W1 that feels lighter in the hand. Bargain-basement handsets are invariably going to make you worry about poor build quality, but Huawei seems to have side-stepped those issues with relative ease. In fact, the W1 is solidly built and resisted our attempts to contort it out of shape with our meaty digits. All told, it should withstand

the dangers of a jeans pocket quite well.

The company’s been taking a page out of Nokia’s and HTC’s playbooks, covering the handset in a matte cyan (or pink) polycarbonate shell that can take the odd key scratch. Those of you who remember HTC’s early Android devices will also note the hint of a chin here, but because the display is mounted atop the shell like a pedestal, it’s a rather nice look. At 2.5 inches wide and 0.4 inch thick, you may expect it not to sit well with your fleshy palm, but fortunately the edges and corners have all been rounded off. So while the phone may appear stark and boxy, it’s very comfortable in the hand.

Above the 4-inch WVGA display, which we’ll discuss more later, are the earpiece, proximity sensor, battery indicator light and a forward-facing VGA camera. Beneath the screen, you’ve got the usual three capacitive buttons, with the microphone notched into the edge of the bezel just to

The W1’s rounded edges make for a comfy in-hand feel.



SPECIFICATIONS	HUAWEI ASCEND W1
DIMENSIONS	124.5MM X 63.7MM X 10.15MM (4.9 X 2.5 X 0.4 IN)
WEIGHT	4.2 OZ. (120 GRAMS)
SCREEN SIZE	4.0 INCHES
RESOLUTION	800 X 480 (233 PPI)
SCREEN TYPE	IPS LCD WITH OGS
BATTERY	1,950MAH (REMOVABLE)
INTERNAL STORAGE	4GB (1.88GB USER ACCESSIBLE)
EXTERNAL STORAGE	MICROSD (UP TO 32GB)
REAR CAMERA	5 MP AF
FORWARD CAMERA	0.3 MP
VIDEO CAPTURE	720P (REAR ONLY)
NFC	NO (ED. NOTE: PR CONFIRMED OPTIONAL NFC IS A TYPO)
RADIOS	GSM: 850/900/1800/1900 UMTS: 900/2100, 850/1900/AWS HSPA+: 21 MBPS D/L, 5.76 MBPS U/L
BLUETOOTH	2.1 HS
SOC	QUALCOMM SNAPDRAGON S4 PLAY (MSM8230)
CPU	1.2GHZ DUAL-CORE
GPU	ADRENO 305 300MHZ
RAM	512MB
WIFI	802.11B/G/N
WIRELESS CHARGING	NO
OPERATING SYSTEM	WINDOWS PHONE 8

the left of the Windows key. Along the frame, you'll find a 3.5mm headphone port and the power / sleep button up top, two-stage camera key on the right-hand side, a volume rocker on the left and a micro-USB port on the base.

The company could have taken some notes on where to place the handset's loudspeaker. Rather than on the rim or the front of the frame, the speaker grille runs beneath the Windows Phone logo on the back of the case. That means if you're making hands-free calls, or annoying your fellow subway passengers, you'll have to hold the phone away from your palm or else mute the sound — a problem we've also spotted on the low- and medium-end Lumias like the 520, 620 and 720.

The rear cover snaps off to reveal the removable 1,950mAh battery, microSD card and SIM slot — so keep a micro-SIM adapter nearby, folks. While the phone boasts 4GB of storage, Windows Phone occupies more than half of that allocation, leaving us with a meager 1.88GB of usable memory. Don't be fooled, then, by that bargain price if you're intending to load media onto the device, as your first job will be to buy a microSD card (up to 32GB) separately.

DISPLAY

We regularly labor the point that Windows Phone's block-color aesthetic negates some of the need for a pixel-rich display. As such, you shouldn't be surprised to read that the W1's 4-inch



WVGA (800 x 480) screen doesn't exactly light our candle, however it does do a decent job considering the handset's price. Granted, it's not going to beat a flagship, but those upgrading from a feature phone won't find too many reasons to gripe. When it comes to replaying video, that 233-ppi display does a manful job, and we could quite happily use it to catch up on 30-minute TV shows during a commute without fuss.

In the plus column, the W1's IPS LCD itself has great viewing angles and is evenly lit. Huawei may have pinched pennies elsewhere, but at least here it used OGS (One Glass Solution) to elimi-

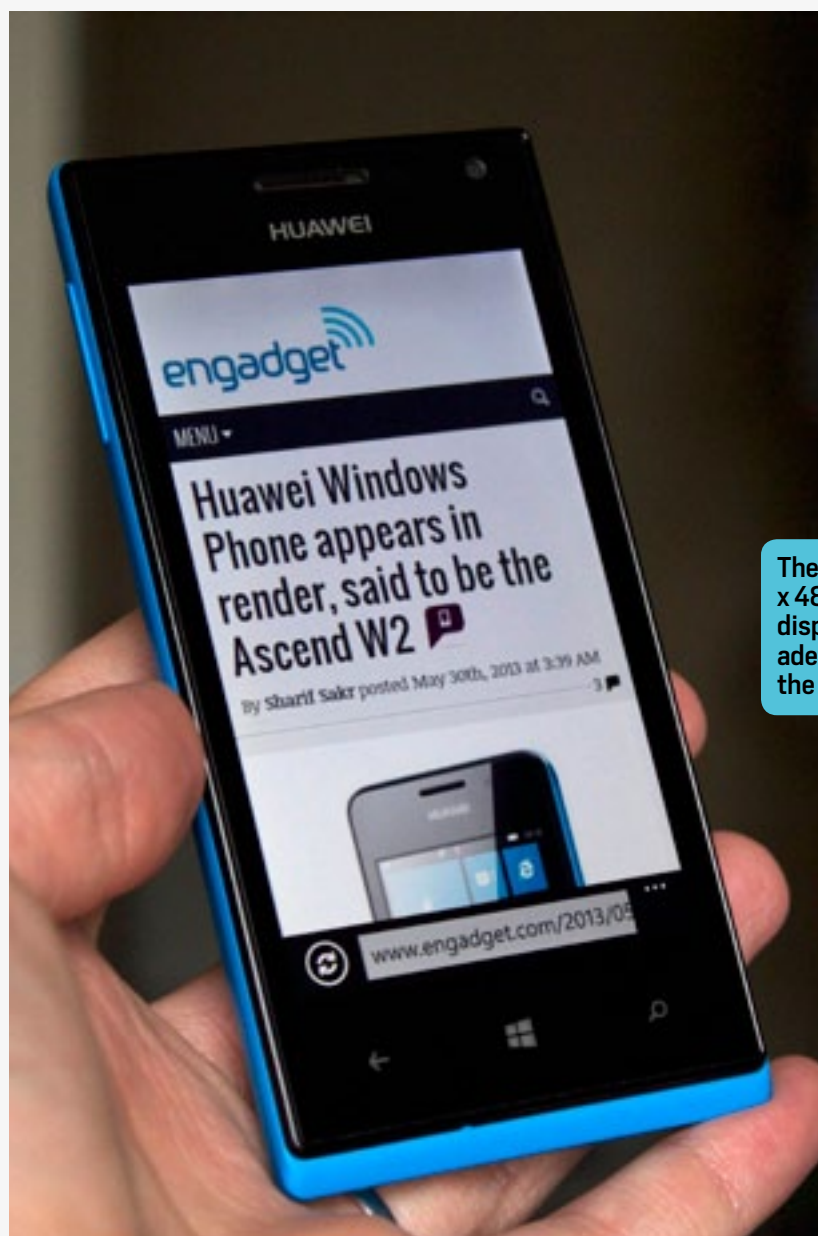
nate the air gap between the screen and the protective glass for a crisper, sharper display. In fact, we'll say that color reproduction is good, but there's a catch.

The catch, of course, is that the W1's backlight should have been a lot stronger, as we had to set the display to maximum brightness even when indoors. As soon as we ventured out, we probably damaged our spine as we craned over the handset, trying to shade it from the midday sun. Granted, it's not a unique problem for any LCD, but trying to take pictures and video in June resulted in a lot of pointing and hoping that we'd captured a decent image.

SOFTWARE

If you've read any of our Windows Phone reviews before, then please feel free to skip to the next section. It's very easy to summarize what follows as "blah blah, limited app selection, blah blah, not as diverse as Android or iOS, blah blah."

Those whose Windows Phone 8 experience has been limited to Nokia's smartphones (and we wouldn't blame you if that were the case) should be prepared for a culture shock. While other manufacturers have tried to prop up the operating system's underdeveloped features, Huawei isn't offering anything beyond the stock build of the OS. As such, your first step is going to be seeking out apps like Nokia Here Drive and Itsdagram (now known as Instance), to smooth out the software's rough edges.



The 800 x 480 IPS display is adequate for the price.



So, to those who've already bought into Android, iOS or BB10: defecting to WP8 presents something of a risk. Admittedly, Microsoft is doing its best to fill out its app catalog, but if you aren't prepared to wait for a first-party Instagram or Vine client (for instance), then you'd best steer clear.

If, however, you're considering the W1 to replace a feature phone, then Windows Phone will provide all of the features and functionality that you're looking for at a knockdown price. The only issue you'll have is that with just 512MB of RAM, some of the apps you've been eyeing up won't work, so be careful.

CAMERA

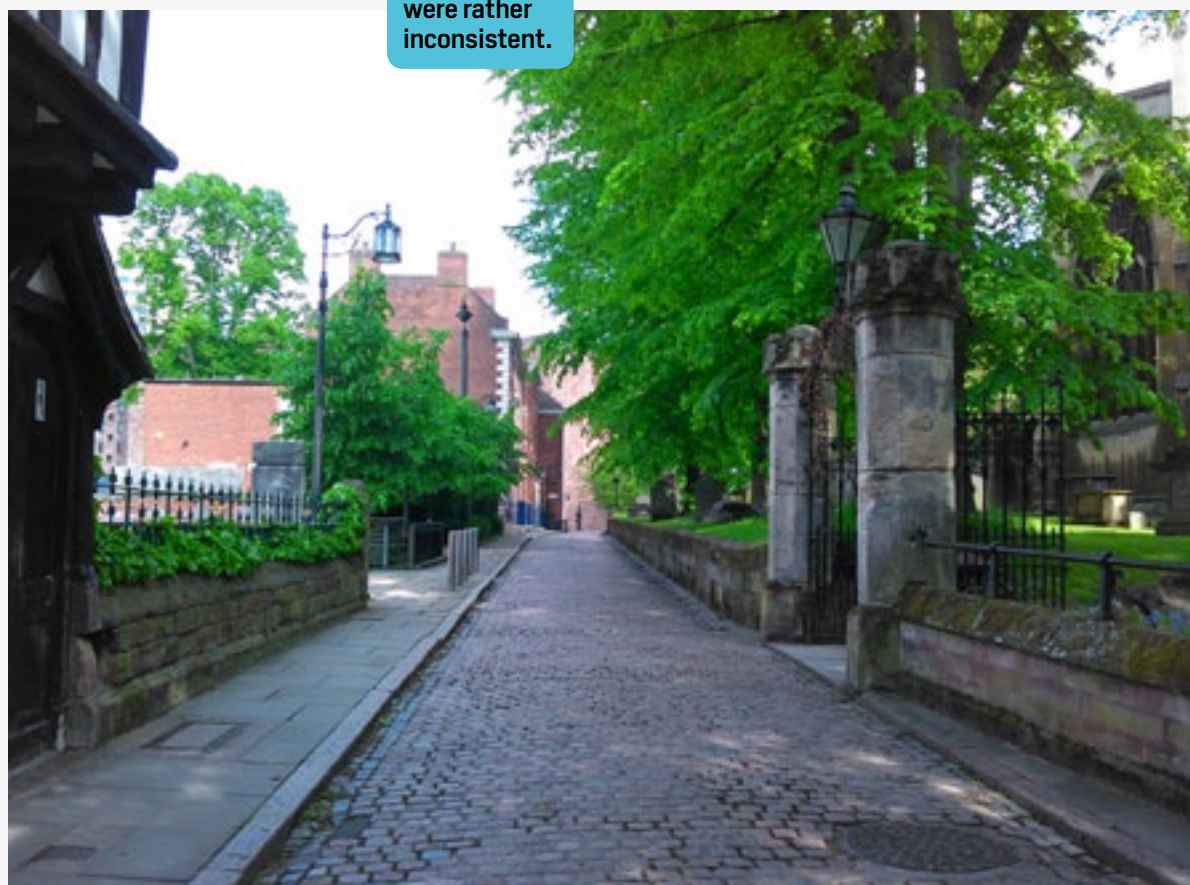
During our time with the phone, we found that taking pictures with the 5-megapixel, rear-facing, autofocus lens was something of a gamble. That's because the results were far too inconsistent, with weak focusing and a color balance that wildly varied from image to image. The presence of an LED flash compensated for the W1's poor low-light efforts, but overall we wouldn't rely upon this device as our primary snapper. On the upside, the company bundles

Bing Vision (Microsoft's Google Goggles equivalent) and other Lenses are available from the Windows Store.

The 0.3-megapixel (VGA) forward-facing camera isn't anything to write home about, but it's not the worst low-res webcam we've ever encountered. The odd overexposed self-portrait may take a few of the years (and wrinkles) off, but we doubt we'd share those pictures online if it wasn't our job. That said, it's a perfectly acceptable camera for a short Skype session.

Taking video is as inconsistent as snapping stills. Colors were either badly washed out or as egregiously oversaturated as an early '80s Bowie video, not to mention the fuzzy detailing. The one positive thing we can say is that no matter how violently we panned around, we couldn't force an interlacing issue, but

Photos taken with the 5MP camera were rather inconsistent.



we'd have taken some blocky transitions and frame dropouts in exchange for higher-quality footage.

Another problem we found is that the W1's microphone just isn't up to the job of recording audio to accompany the video. Even on a still day, it picked up a huge amount of wind noise, which obscured much of what we had to say. When we took the handset out for a jog, the subsequent footage was plagued with a popping noise that would have made it unusable for its intended purpose. We were also surprised to see that, despite the poor quality of the video, clips are recorded at a data rate of 1.6 MB/s, which will rapidly eat away at your meager onboard storage.

PERFORMANCE AND BATTERY LIFE

The spec sheet makes it clear that Huawei spared plenty of expense when it came to sourcing the internals. We played with the Snapdragon S4 Play MSM8230 that powers the device in late 2011, and the Adreno 305 GPU that partners with it is from a similar vin-

tage. It's to Microsoft's eternal credit that Windows Phone works so well on low-end hardware, and we'd be surprised if casual users even realized they were using 2-year-old gear. Navigating around is stutter free and the Ascend W1 was even able to steal a march on Nokia's low-end Lumias in the benchmarking stakes. It's a similar story in the browser, which is smooth (if not whip-fast) and we could switch between the mobile and desktop versions of Engadget without any stutter or lag. When we tested it with a 3D gaming title like *Brutal Chase*, there was the odd stutter, but nothing more.

One place where Huawei did splash the cash was in the battery department, supplying a power pack with a whopping 1,950mAh capacity. During WPBench's intensive rundown test, it survived for two hours and 57 minutes, and we found that the W1 kept on trucking during a day trip without us needing to worry about nursing the power. Considering that we had the display brightness turned up high and

BENCHMARK	HUAWEI ASCEND W1	NOKIA LUMIA 520	NOKIA LUMIA 620	NOKIA LUMIA 720	HTC 8S	HTC 8X
WPBENCH	212.25	178	180	179	180	221
BATTERY RUNDOWN	2:57	2:41	3:41	4:36	3:30	2:30
SUNSPIDER 1.0 (MS)	1,127	1,400	1,443	1,440	1,415	914
ANTUTU	9,281	7,350	7,479	7,348	7,333	11,775

SUNSPIDER: LOWER SCORES ARE BETTER





The W1's battery fared well against the competition.

were taking pictures all day, we can only assume that the low-res display and low-spec hardware sip, rather than gulp from the electric bar.

If you're one of the few who still uses their smartphone as, you know, a telephone, then be warned. Call quality on this device is going to be a bit jarring to anyone who has been coddled by noise-canceling microphones or HD voice. It's not unbearable, but the call

quality is nowhere near what we'd expect from a newly released handset. That said, it does follow the theme that the W1 has been put together from components that other platforms have since moved a long way past.

THE COMPETITION

When discussing the Ascend W1's closest rivals, we're really only talking about the Lumia 520 (521 in the US) and the Lumia 620. Perhaps surprisingly, Hua-

WP8 PHONES	HUAWEI ASCEND W1	NOKIA LUMIA 520 / 521	NOKIA LUMIA 620
PRICE	£130 (\$230)	£120 (\$149)	£150 (\$180)

PRICES SUBJECT TO CHANGE



wei's entrant is able to outperform both devices in nearly every benchmark — as we suspect the 620's longer battery life is partly down to its smaller, and therefore less-demanding, display. When we reviewed the two Lumias, we found that the 520's lackluster imaging, lack of a front-facing camera and low-end specs made the handset feel like an irrelevance. By comparison, the £30 more expensive 620 gains a host of extra features and a slightly smaller — yet superior — display. Both of Nokia's handsets, however, come with 8GB of storage and can take microSD cards up to 64GB, compared to the 32GB you'll be able to insert into the W1.

WRAP-UP

Huawei's Ascend W1 is a well-crafted device that'll impress anyone making their first tentative steps into the world of smartphones. If you're only motivated by price, aren't fussed about the limited storage options and won't be

taking a lot of pictures, then this is an eminently sensible purchase. It's only when you consider the unit in a broader context that its flaws begin to show, and we do feel obligated to tell you if there's a better option available.

For instance, if you stack it up against the Lumia 520, the W1's superior looks, better build quality, forward-facing camera, bigger battery and overall performance make it stand out. But, the 520 boasts twice the internal storage (8GB) and twice the microSD card capacity (up to 64GB), which may tempt those who take their music collection with them. Both units have weak primary cameras, and as such, we still think that if you've got the extra cash lying around, your best bet is still to stick with the Lumia 620. **D**

Dan is a man of many words, most of which are foisted upon his unsuspecting audience on Twitter.

BOTTOMLINE

HUAWEI ASCEND W1 \$230 / £130



PROS

- Cheap
- Attractive, well-built hardware
- Excellent performance
- Big battery

CONS

- 1.88GB of usable storage
- Inconsistent camera

BOTTOMLINE

This very good Windows Phone 8 device is hampered by the lack of storage and a lackluster camera, but good performance may tempt speed freaks.



NOKIA LUMIA 925



The **Lumia 925** gets a slim metal shell and a fine-tuned shooter, but are the tweaks worth an upgrade from its 920 predecessor?
By Mat Smith

It's been just half a year since Nokia revealed its first Windows Phone 8 device, and we've already got another flagship to review. The Lumia 925 marks a departure in design for Nokia — it looks nothing like its predecessors, barring an expanse of screen and some capacitive Windows buttons. This time around, the phone is housed in an aluminum frame, making it Nokia's first metal smartphone since those heady Symbian days. This, alongside some hardware repositioning and (minor) specification changes, has been enough for the Lumia 925 to weigh notably less



than its 920 forebear — and we think it's enough to feel in your hand. As we juggled the two Windows Phones ahead of this review, our first impressions were that the 925 was also much easier to hold, despite only a negligible difference in thickness.

Arriving in three comparatively restrained monochrome hues (white, black and grey), Nokia's returned to OLED for its display tech, although it's the same 1,280 x 768 resolution as the rest of the 920 series and includes the company's anti-reflective screen technology for good measure. Its new Smart Camera app debuts on the Lumia 925, standing alongside the stock app and offering up some interesting new picture-taking options.

Otherwise, it's an awful lot like the Lumia 920, at least on paper: there's the same lauded 8.7-megapixel camera sensor (with an extra lens element), the same dual-core 1.5GHz processor

This, alongside some hardware repositioning and (minor) specification changes, has been enough for the Lumia 925 to weigh notably less than its 920 forebear.

and the same OS (albeit with some beta goodies). Nokia reckons that the phone is geared towards a different buyer than those who bought the Lumia 920, but alongside Verizon's recent US-only Lumia 928, is there enough to get fans that skipped on last year's model to buy this time around? And is there enough to persuade you *not* to hold out for what's on the horizon?

HARDWARE

Slim, understated and — dare we say — a whole lot more Android-esque, the Lumia 925 doesn't look like any other Lumia. Were those vibrant colors not pulling in customers, or is Nokia simply trying a different tack?

The company has said that the phone is aimed at people that wanted something that stands out a little less, but we've got mixed feelings on the current grey/black/white palette, even if it does go well with the new metal look. In the grand scheme of contemporary smartphone design, the Lumia 925 feels a lot safer, design-wise, and, well, a little blander than what we've seen before. However, it's another well-made phone, and to be clear, we particularly like the finish on the matte white model.

There's an almost ceramic texture to the phone that improves the grip and also lends it more of a flagship feel. And about that feel: we mentioned in our Lumia 920 review that Nokia's first Windows Phone 8 device was a bit cumbersome, a bit too heavy. Well, this one isn't. The Lumia





The 925 has slimmed down to 139 grams and 8.5mm thin.

The Lumia 925 feels a lot safer, design-wise, and, well, a little blander than what we've seen before.

925 has shed around a quarter of the weight of the 920 (139g versus 185g), but that has also required some sacrifices: the new model arrives with 16GB of storage (down from 32), and no built-in wireless charging. If you're looking for some contactless charging, you'll need to purchase a cover that adds that functionality.

While thinner (a “volumetric” 8.5mm vs. 10.7mm) than the Lumia 920, the 925 fits so much better, so much more comfortably, in our hands. It's not quite as thin as Nokia would like you to believe — if you line up both phones and take into account the camera protrusion, the two

are pretty close. But once you grip the 925, you'll understand it isn't at all clunky like its predecessors. The frame itself is fashioned out of lightly textured aluminum, with machined buttons in the typical Windows Phone places. The 925's camera button has a strongly discernible two-stage depression, so you'll

know when you're focusing with a half-press or capturing a photo with a full depression.

All the ports (micro-USB and headphone) now belong on the top edge, as well as the micro-SIM tray. If we had any complaints about the phone's build, we'd argue it isn't quite as polished as the Lumia 920. We loved those micro-drilled holes for the speaker and mics, and the micro-USB port that sits just below the surface of the Lumia 925 lacks the black outline we've got on our yellow Lumia 920. The headphone socket, oddly, does get that treatment. Within the plastic backing panel, you'll find Nokia's most recent imaging pride and joy: its 8.7-megapixel sensor with optical image stabilization, arriving with what appears to be an identical dual-LED flash (no xenon here, sadly). The camera unit protrudes slightly, but the lens is fortunately





The phone has an 8.7MP camera with a dual-LED flash.

slightly recessed within the plastic that surrounds it, offering some protection when resting on flat surfaces. There are some loudspeaker grille holes at the bottom, although the position does blast the sound into your hands if you're holding it in portrait mode. Above that is a trio of contacts for that optional contactless charging cover. The phone itself is sealed, so there's no access to either the 2,000mAh battery or any slot for microSD expansion.

Melded into the aluminum frame is Nokia's new antenna system. The primary one resides in the bottom of the phone, with two more antennas in the top edge. Those black stripes then separate these antennas from the rest of the aluminum body — Nokia says it's ensured that the antenna "maximizes use of radio bands," whether on GSM (850 / 900 / 1800 / 1900), WCDMA (850 / 900 / 1900 / 2100) or LTE (Bands 1, 3,

7, 8, 20) — check out our Battery Life and Performance section to see how it fared.

DISPLAY

With the Lumia 925's 4.5-inch AMOLED WXGA (1,280 x 768) display, we're offered something to compare against the existing Lumia 920, a phone that went for an IPS

LCD over OLED. You've probably already heard our complaints about OLED, with the primary one being that bluish tint affecting whites and other shades — and its something that still pervades this phone's display when viewing it at off angles. However, Nokia's attempted to amend this by adding a "Lumia Color Profile" option. We had ours largely set on enhanced colors and neutral white balance.

We prefer the AMOLED option over IPS LCD, in part because the black frame surrounding your Windows Phone home screen is nearly indistinguishable from the bezel.





You might recall a similar choice on Samsung smartphones using AMOLED from the Galaxy S II and onwards, but there's not just a handful of profiles here — Nokia leaves the settings in your hands to adjust. Also nestled within the same settings option is the familiar high-sensitivity touch option that lets you use gloves or tap on the screen with your nails.

We prefer the AMOLED option over IPS LCD, in part because the black frame surrounding your Windows Phone home screen is nearly indistinguishable from the bezel, at least head-on. Better still, AMOLED's "black" pixels don't require any energy, meaning there's likely to be a minor battery-saving benefit for anyone who goes for the black Windows Phone customization over the white one. Viewing angles are great, and at wider angles, the screen brightness diminishes less on the 925's OLED compared to the IPS

screen of the 920.

Nokia's coined the phrase PureMotion HD+ to describe its high-response screen and in practice, it means a display that doesn't blur much as you're scrolling through sites. For outdoors, there's a ClearBlack layer to aid readability, plus a high-brightness mode when you're

desperate to browse the web outside. In another effort to slim down, the phone's Gorilla Glass 2 screen has shrunk to a 2.25D curvature (compared to the 2.5D curve on the Lumia 920). This lesser angle means not as much glass is used, which helps the phone shed mass in the form of both grams and millimeters. Even so, there's still more than enough curve to make swiping the screen a comfortable experience.

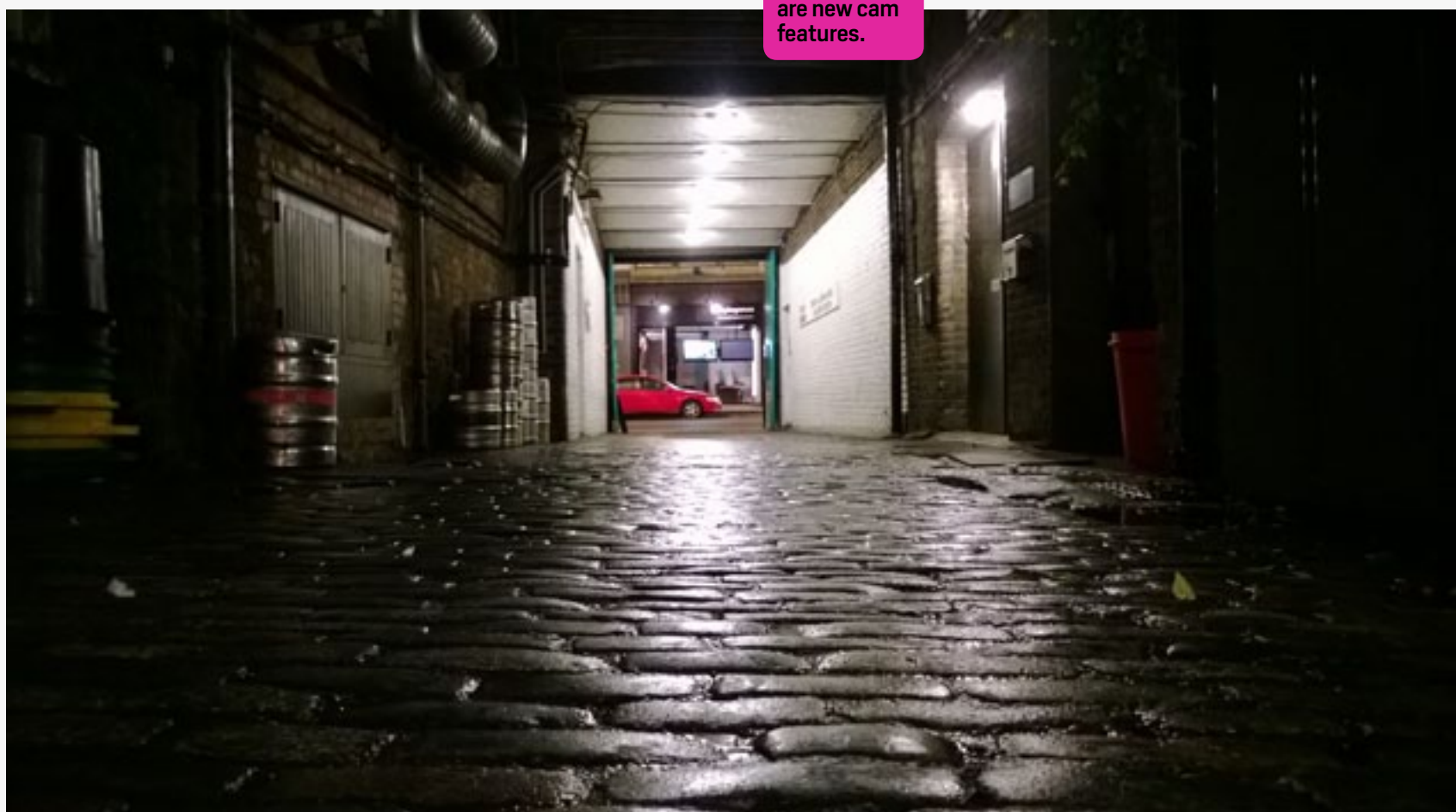
CAMERA

The hardware has been left largely unchanged since the Lumia 920, with an 8.7-megapixel sensor, ISO up to 800 and 1080p capture at 30 fps, all through an f/2.0 Carl Zeiss lens. Within that lens, there have been some improvements, however, although nothing quite as progressive (or impressive) as optical image stabilization or lossless zoom. Alongside noise-compression





Motion Focus
and improved
sharpness
are new cam
features.



algorithms and software-based tweaks, Nokia's added a sixth glass element to the five-lens Carl Zeiss setup seen on the rest of the Lumia 920 series. We've

been promised that this would improve the sharpness of images — something we did indeed notice during our five days of shooting.



In addition to this review, we've been testing out the 925's camera against its 920 and 928 stablemates. When pitted against the HTC One and the Lumia 920, the Lumia 925 offers generally sharper images than its Nokia sibling, while color balance and image reproduction (recording what was in front of our eyes on the screen) was better on the 925 over HTC's UltraPixel camera. When compared, we noticed that while the Nokia phones use the same sensor, those behind-the-scenes improvements yield sharper images, and (at least in our test) better light metering. In our "pinecones in a bowl" photo, for instance, you'll notice finer detail on the pinecone texture. Hopefully it's that glass lens component at work.

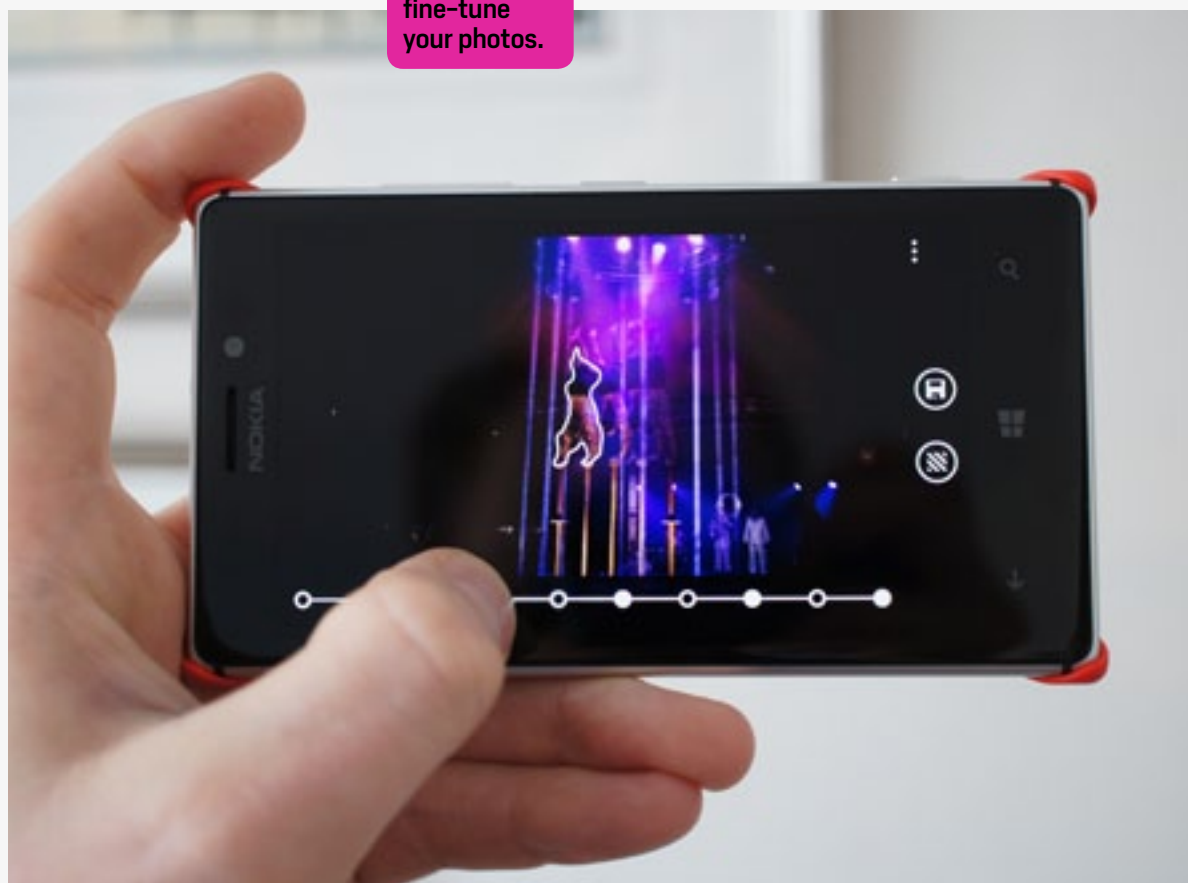
Against the HTC One in low light, both devices delivered good results. If we had to call a winner, the Lumia inches past the One, with a more reliable white balance and finer detail, due to its higher megapixel count. We concentrated on shooting in the evening and in darker situations to demonstrate (again!) the quality of photos you're able to snap with Nokia's smartphone camera. We were delighted with some of the results. Nokia even set up a special photo

session with performance group Limbo for journalists to put the company's new phone through its paces.

Optical image stabilization really kicks in here, making your video footage look more like it came from a dedicated video camera rather than some slender smartphone. Nokia's audio recording skills also manage to deftly capture the often raucous band playing along, while the autofocus was able to keep the performance sharp despite some challenging lighting.

Nokia's new Smart Camera is worth talking about too, as it offers up new ways to capture and share what you see around you. It's the replacement for the burst-shot Lens app Smart Shoot, and Nokia promises that the brunt of the features on display here will appear on its other WP8 phones, so if you've already invested

The Smart Camera app helps you fine-tune your photos.



in a Lumia, please do read on, because you'll be getting similar photo-tinkering goodness very soon.

You can access the Smart Camera app either through its very own icon or through the Lens sub-menu on the standard camera UI. In fact, there's even a third way — you can recalibrate the physical camera key to launch into Nokia's new smart iteration rather than the standard photo / video app. This then takes you into a sparse camera UI, where you can review previous shots, swap to different Windows Phone Lenses and use a touchscreen capture button. Once you've focused, a circular timer will show the duration of the burst photography. After a few seconds of thinking time (we'll come back to this unfortunate flaw) you'll be offered up a Best Shot, chosen by a ~~man in a room~~ Nokia's imaging algorithms as the best of your 10-shot burst collection.

Sometimes it's spot-on (it's better with crowds of faces). Other times it fails to grasp what you were looking to

focus on. Sure, that brick wall may look crisp with good lighting, but you were trying to capture someone flying past on a scooter. That's when the second feature kicks in: swiping down once offers up Action Shot. This was by far our favorite, as it's capable of combining 10 images against a fixed backdrop. You can then select several frames, superimposing them on top of each other. There's a fade toggle that lets you select one primary image, with additional layers then slightly faded out. Better still, the interface is uncomplicated. Once



Comparison photos: Lumia 920 (above) and 925 (below).

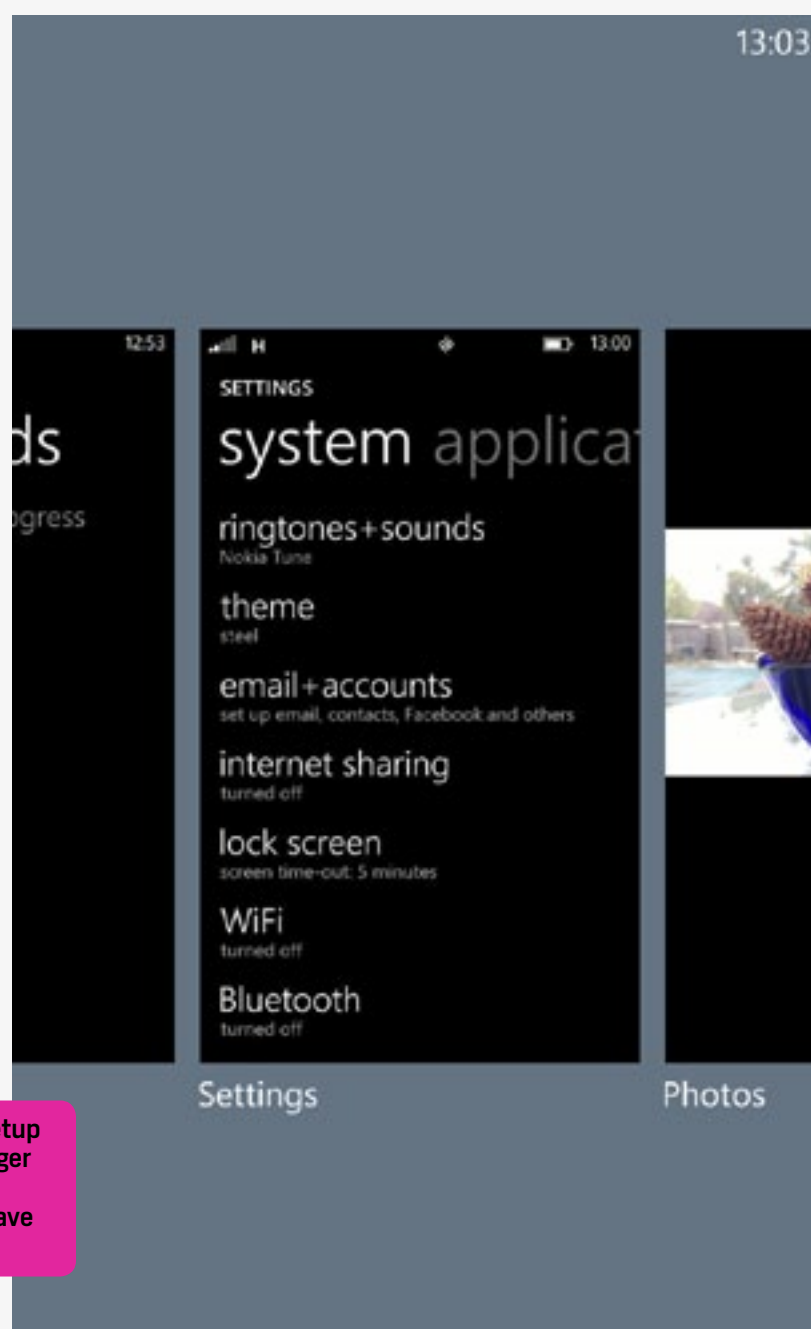


you understand that the background needs to remain fixed, you'll be able to produce some eye-catching results.

The results aren't always perfect — you'll often get some awkward ghosting when the camera can't quite detect the object in motion, but it's the standout addition for us. Motion Focus (seen on our Tube shot) is another new option, which detects your moving object, then blurs the surrounding area. There's a choice of a low- and high-blur effects, but expect light sources to sometimes ruin the illusion. Change Faces tries to ensure group shots come out with everyone's eyes open. You can tweak a picture person by person, selecting everyone's best smile from the 10 shots captured. Lastly, Remove Moving Objects, er, does what it says it will — erasing that car that spoiled your beautiful cityscape. Again, like the Action Shot, you'll need to have taken a set of static shots, and the Lumia will then work out what you might not want in the photo. One of the biggest drawbacks for us is the several-second load time necessary to get Smart Camera up and running. It defeats the point of capturing something in motion if the 925 is languishing trying to get the app open. We're hoping Nokia makes it a priority to shave the app's start-up time, because it deserves the attention.

SOFTWARE

Windows Phone. It's still not there. Our



online readers will likely convene on the comment section of our web post to say they don't need the likes of Google+, Dropbox and Instagram, but these omissions represent a larger picture. These app makers aren't particularly bothered that they're missing out on Windows Phone, and as such, it's likely that future apps you *do* want won't make it to Microsoft's OS, even if they're already available on iOS and Android. So, it's pretty much the same ecosystem situation as we outlined in our Lumia 920 review, except Spotify's now made it to WP8 and you



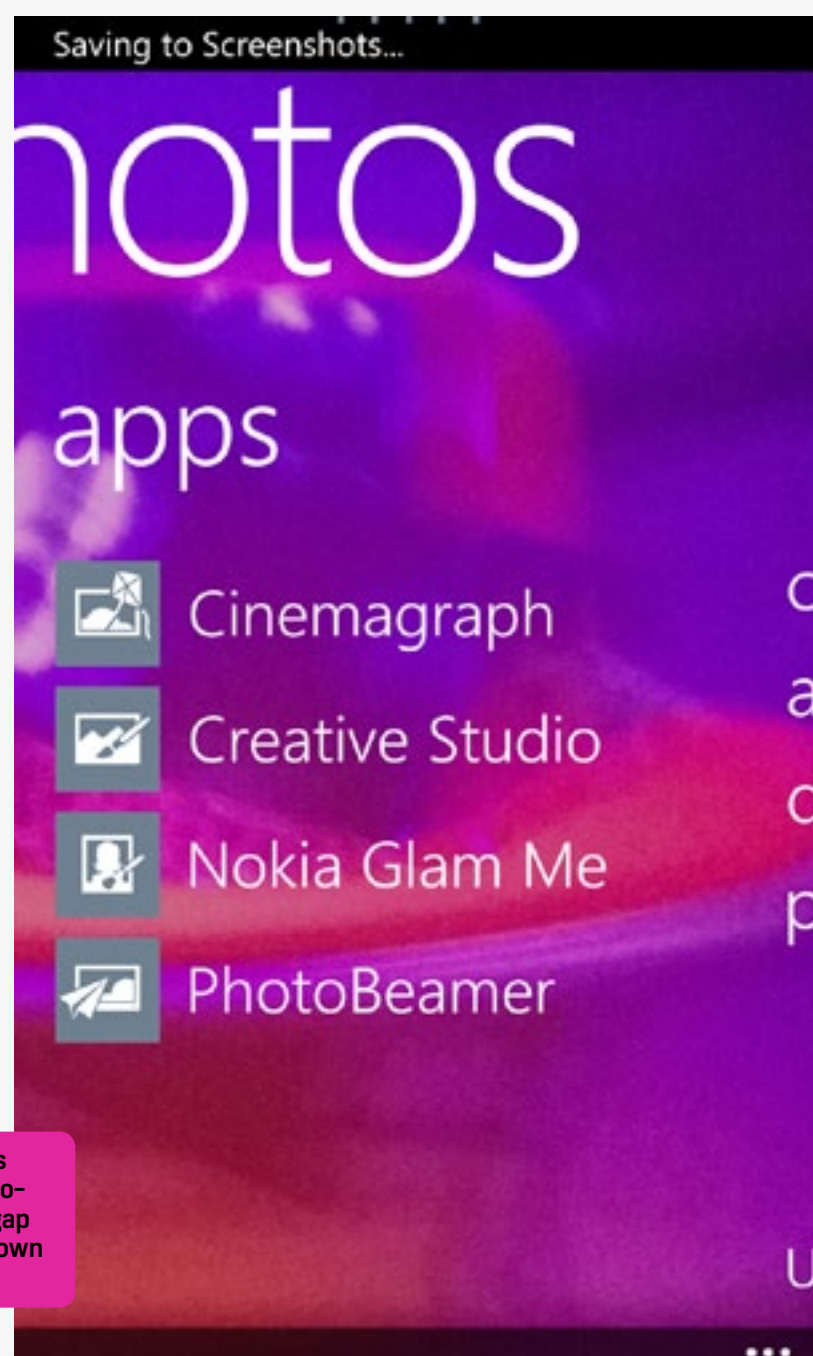
Windows Phone. It's still not there.

can expect to see a *Halo* game or two in the future.

Right, so that part's covered. Now on to the highlights. The superb Nokia Here maps are... here, as is Nokia Music and its accompanying free offline playlist feature. New additions include an FM radio tuner, which, like Android versions, requires some headphones to double up as an antenna. Also present is Data Sense, no longer a Verizon-only feature and offering up a similar experience (and statistics) to apps found (again) on Android — a measurable way of keeping an eye on your data consumption. There's also the still-beta Glance screen that came installed on our review device, with Nokia giving a nod to its Symbian past with an always-on clock. There's even a very stylish red iteration you can choose during night hours, although we'd love to see Nokia expand on what sort of information is displayed here, beyond charging status and time. There's now the ability to wake up the phone with a double tap — a MeeGo feature that's reappeared. It's a nice little trick, although having to then swipe upwards to unlock the phone seems a little redundant.

Not all the changes are for the better, however. Getting your Google account to work on the Lumia 925 also takes a little bit

of extra work. Google Mail uses an outgoing SMTP email server, rather than the system still used on the Lumia 925. Technicalities aside, this means that the phone only polls for new mail every 15 minutes — and that's the shortest interval. Meanwhile, on our companion 920, the phone downloads new content as it arrives. Google says it'll support its sync service for Windows Phone until the end of July and has said that “it's now possible to build a seamless sync experience using open protocols (IMAP, CalDAV and CardDAV) for Gmail, Google Calendar



WP8 fills the photo-editing gap with its own apps.



and Contacts.” Unfortunately, that’s not yet how it works on the Lumia 925. With some help from Nokia, we did manage to figure out a workaround through the phone’s advanced setup for email, which downloads new content as it arrives, but it’s unfortunately more complicated than it should be.

BATTERY LIFE AND PERFORMANCE

Running on the same dual-core 1.5GHz Snapdragon S4 processor seen on its predecessor, the Lumia 925 copes just fine flipping between apps in the multitasking menu, or pulling up media-dense websites. Running SunSpider 1.0 to test Internet Explorer on the new phone resulted in a decent score of 905.4ms, which is nearly identical to the 903.2ms we got on the Lumia 920. The Lumia 925 does a good job handling what’s typically a pretty mediocre workload — there’s no *GTA 3* here to push that Snapdragon processor to its limits, and the majority of games or apps available on Windows Phone can, if available, run on any mid-range Android device.

There’s also 1GB of system memory, a standard feature on most top-end WP8

If Nokia can craft a micro-SIM tray, why not offer something elsewhere on the phone’s perimeter for more data storage?

phones, alongside 16GB of storage. While you could argue that’s half of what was delivered on last year’s Lumia 920, 16GB is still relatively ample — but we’d have paid a little more for the option of some microSD expansion. If Nokia can craft a micro-SIM tray, why not offer something elsewhere on the phone’s perimeter for more data storage?

With the same battery, processor, resolution and screen size (if not technology), we expected a battery rundown to offer comparable times to the Lumia 920 on the same 2,000mAh battery, and we were right. As we’ve played with it over the last five days, we noticed that real-world use was actually longer than what we were expecting from a Nokia Windows Phone. Whether that’s due to the AMOLED display

BENCHMARK	NOKIA LUMIA 925	NOKIA LUMIA 920	HTC WINDOWS PHONE 8X
WPBENCH	216	227	221
BATTERY RUNDOWN	3:55	2:55	2:30
SUNSPIDER 1.0 (MS)	905.4	903.2	914 (ON 0.9.1)
AnTuTu (*GPU test off)	11,819*	11,457*	11,775

SUNSPIDER: LOWER SCORES ARE BETTER





It's no 808 PureView, but the camera here is decent.

(and how it handles black output without expending much power) or that always-on clock that meant we weren't as obsessive with powering the device on all the time, we were able to last a good day and a half on a single charge.

There's no contactless charging built-in; you'll have to pay an as-yet undecided amount for that pleasure, but it could be worth the investment. The covers are lightweight, although they (like most phone cases) do ruin the cleaner lines of the base hardware, adding to the thickness of the phone. But we like our Lumias with at least a bit of color, and a big chunk of red or yellow certainly helps there. During our speed tests on an EE 3G connection, we found that the Lumia 925 did in fact perform better than our poly-

carb-clad 920. Presumably due to the work done on the antenna, the aluminum model typically bested it by 1 Mbps on average. Speeds on HSPA+ circled around 6 Mbps down, and just shy of 1.5 Mbps up, in line with other smartphones on other networks. The Lumia 925 also gave us reliably clear, stable voice calls — as we pretty much expect from Nokia.

WRAP-UP


Nokia has fixed several of the biggest complaints leveled at the Lumia 920. In fact, the Lumia 925 feels like a Windows Phone pitched at people who think they're going to buy an Android phone next. The colors and design are more understated; the hardware is thinner and



lighter, and arguably just as impressive as the HTC One or the iPhone. Our complaints about the Windows Phone ecosystem still stand, and we don't see that changing much in the next six months. Despite that, Nokia has improved on the software to ensure that while the Lumia 925 stands out from the rest of the series at launch, all of its smartphones will benefit from notable improvements like the Glance screen and the Smart Camera app. It's good news for Lumia phone owners, but makes the 925 a trickier sell over the 920, which is now £150 cheaper off-contract in the UK. Not to mention, the extra storage and built-in contactless charging you're losing when you choose the 925 instead.

Additionally, there's yet another shadow hanging over the 925: EOS. Nokia has unabashedly used its imaging pedigree as

There's yet another shadow hanging over the 925: EOS.

a major selling point, and we've constantly pointed towards the lossless zoom-capable 808 PureView camera sensor as what we want to see on its Windows Phones. The rumors suggest we're swiftly approaching its arrival and we'd recommend readers wait and see exactly what Nokia's got planned before putting down money for the Lumia 925. 

Edgar Alvarez contributed to this report.

Mat is an Associate European Editor who lives in the UK. He's a Liverpool supporter who enjoys obscure Japanese game shows.

BOTTOMLINE

NOKIA LUMIA 925 £500



PROS

- Entertaining, addictive new Smart Camera functions
- Improved camera results
- Thin and light, well-built
- Vivid AMOLED display, options to adjust color profile

CONS

- Lacks built-in contactless charging
- Disappointing app selection, still

BOTTOMLINE

The Lumia 925 is better than the 920 in most, but not all ways. Nokia clearly made sacrifices for a slimmer design, but we think they're worth it.



Life After Kick in the Project

PRIMESENSE'S
**Plans for a Post-
Microsoft Future**

By Nicole Lee



PrimeSense
President and
Founder Aviad
Maizels (left) and
CEO Inon Beracha.

PHOTOGRAPHS BY RONEN GOLDMAN



WHEN PRIMESENSE FOUNDER Aviad Maizels put a prototype of a 3D sensor on a chip in front of Microsoft in 2006, he had no idea it would lead to the biggest turning point in the Israeli startup's history. Four years later, its partnership with the Redmond giant resulted in Kinect, the motion-sensing camera that made headlines around the world. In 2013, however, Microsoft unveiled an

all-new Kinect, the result of years of entirely in-house development — without PrimeSense's assistance. As fate would have it, the company returned to its chip-making origins a year ago, creating a new product called Capri, a cheaper, lower-power and tinier version of its 3D system-on-a-chip; so tiny, in fact, that it's designed to be embedded inside tablets, laptops, thin displays and smartphones. With 3D use cases that go far beyond *Dance Central*, the Capri is the latest sign that PrimeSense is ready to break free from its video game roots.

My first meeting with Maizels was at a hotel suite in the Renaissance Las Vegas during CES 2013, where PrimeSense first unveiled the Capri sensor to the world. Our second face-to-face interview was decidedly less glamorous. It took place at a Peet's Coffee in Terminal 3 of SFO at 7:30 PM, hours before he was to board a flight back to Tel Aviv. It was the only available time slot in his busy schedule. When we met, he was dressed in an all-black ensemble consisting of a long-sleeved pullover and fitted trousers. He appeared casual, but put-together; his close-shaven chin and close-cropped hair still exuding a professional demeanor. Maizels had just arrived at the airport from Silicon Valley, where he spent the previous few days in a series of meetings. When asked who the conferences were with, he declined to say. "We're working hard on deals," he said slyly, with a tired smile and a strong





The first Kinect was powered by PrimeSense's 3D sensor on a chip, which used near-IR light, a CMOS image sensor and a variety of algorithms to work its magic.

Israeli accent. Tall and slender, Maizels is soft-spoken, yet articulate in a language that clearly isn't his first.

As exhausted as he was, at least he wasn't the bundle of nerves he was seven years ago when he and a few fellow co-founders brought an early prototype of their 3D sensor to the 2006 Game Developers Conference in search of a business partner. It was their first time at the famed video game trade show, and they could only afford what Maizels called a "garbage hotel." In what can only be described as a stroke of luck, they managed to impress enough industry players to score a meeting with Microsoft at E3 in May of that year.

That meeting was the catalyst for Project Natal, which Microsoft introduced at E3 2009 as a teaser for what would eventually become the Kinect. It was PrimeSense's first major partnership, and one that placed it on the map.



Growth was inevitable, and it now has three offices in Asia, two in the US and one in its home base of Tel Aviv.

It's a far cry from the company's humble beginnings in 2005, when Maizels and his fellow co-founders — Ophir Sharon, Alex Shpunt, Dima Rais and Tamir Berliner — found themselves out of jobs after mandatory stints in the Israeli army. Maizels met Sharon, Berliner and Rais while working in research and development for the military, while Shpunt was a friend of a friend. Everyone came from science-heavy backgrounds, with degrees in engineering, computer science and mathematics scattered among them. Seeking to carve out their own path instead of just getting a job, Maizels gathered the group to, as he put it, "come up with the next big thing."

The key
question
that emerged
out of
the initial
discussion
was what if
a machine
could see?

What Maizels and his colleagues decided upon was a "technology that made technology itself disappear." Berliner explained that even today, technology still exists as an interaction between man and machine. "When we're playing games, you need to do it yourself. You need to actually use the mouse and the keyboard ... the machine doesn't understand what you want; it does what it's told."

Berliner explained the philosophy with a childhood anecdote: "When I was 10 years old, my kid brother was 5, and he wanted to watch an episode of *Teenage Mutant Ninja Turtles*. The episode had a very specific name, and he told me to write it on an empty videocassette. I asked him, 'Why would you want me to write it?' He said that if I write it on the tape, that is the show the machine will play. It seems really silly now, but that's how we want technology



to work ... we want it to be magic.”

As most of the founders were gamers, video games became their starting point. “It seemed like the whole gaming industry was stagnant,” Maizels said. “Finish one game, then you get into the next game, and it’s a similar story, similar actions.” The group let their imaginations run wild and wondered: what if they could wave their hands and have it be as if they were holding a sword? What if you never had to bump into walls ever again? What if, in a first-person shooter, you knew to duck and cover to dodge bullets instead of thumbing a d-pad?

“We had all these questions,” Maizels said. “But we didn’t have an easy answer.”

The key question that emerged out of the initial discussion was what if a machine could see? That led to the

PrimeSense co-founders [left to right]: Alexander Shpunt, Dima Rais, Ophir Sharon, Tamir Berliner and Aviad Maizels.



idea of a device that could capture a person's movements with "sight," which the team pegged as the most important sense shared by both man and machine. And so the company's name, "PrimeSense," was born.

In late 2005, they cobbled together enough savings to rent a couple of conference rooms inside a Tel-Aviv office building. In early 2006, they hired Ziv Hendel, who helped out so much in the company's early days that Berliner considers him an honorary co-founder. The group breakdown was as follows: Sharon and Shpunt were in charge of hardware; Shpunt and Rais took care of algorithms and physics; software was in the hands of Hendel, Rais and Berliner; Hendel and Berliner took care of demonstrations; and Maizels ran the show, keeping the all-important business side of things afloat. Which, it turns out, was easier than Maizels thought.

"We were super lucky," he said, pointing out that the gaming industry isn't exactly the sort of business that venture capitalists in Israel invested in. "Most investments are in security, enterprise software, internet companies ... known entities with a proven record."

However, PrimeSense was located in Israel's equivalent of Silicon Valley, or Silicon Wadi as it's known, and he was able to find investors who believed in the product. "We got funding pretty fast ... I made my pitch that PrimeSense represented new paradigms of interactivity ... and got early starting money to play around with." Early investors included Gemini Israel Ventures and Genesis Partners, both based in Herzliya. Each had backed successful startups in the past, including Diligent, a storage company that was eventually purchased by IBM, and Kidaro, a desktop-virtualization vendor that Microsoft acquired.

The investors offered PrimeSense a bridge loan, which gave the company a lot of money up front, but also for a shorter period of time. This meant the group needed to show VCs constant product improvement to assure them their investment was well worth it. "When the investors visited, we have to show them progress," Berliner said. "What they saw last week, has to be nothing compared





A family portrait of PrimeSense's products [left to right]: the Carmine 3D Sensor, an early pre-Kinect prototype and the Capri Embedded Reference Design sensor for compact devices.

to what they see this week. On top of that, we also had to create demos that targeted the general public.”

After months of trial and error, they came up with their 3D sensor on a chip. It acquires depth via “light coding” technology that processes a scene with near-IR light and then uses a CMOS image sensor to read the coded light back from the scene, using a variety of algorithms to extrapolate the 3D data. Shpunt was the one who came up with the initial design, which then evolved over time as the team wanted the product to be as affordable as possible without sacrificing its overall integrity.

“The technology has to be cheap,” Berliner explained. “It needs to be cheap, and good enough. That doesn’t sound like something you want to hear from a startup who wants to conquer the world, but we felt that was key to wide adoption.”

The first hardware prototypes were pretty simple in terms of cost. “Some of the hardware was loaned to us by friends and colleagues,” said Berliner. Some was pur-



chased with the little money they had. The initial short-range prototypes were actually ready around September 2005 — about a month after the company was formed — and that was even before they got into an office. By December, they had their first “full-body” prototype — meaning the 3D sensor was able to track an entire person from a few feet away. They were also able to whip up several demos using OpenGL 3D point cloud-visualization software that showed images dancing and playing piano in step with real-world movements. Other demos included game integration where they mapped the person to controls for skateboarding or driving a car.

The resulting product was a white plastic box that contained an RGB camera, an infrared sensor, a light source and that PrimeSense 3D-sensing chip. It was this device that made its way in front of Microsoft employees, including Alex Kipman, an incubation director for the Xbox 360.

“It was the best thing he’d seen in a long time,” Maizels said. “Not just in the gaming market, but in general.” Kipman, who hails from Natal in Brazil, named the project after his birthplace.

The next few months were a whirlwind of activity for

“[The Wii] was close to what we’re doing,” Maizels recalled. “We were terrified. We thought, if it’s a totally dumb experience, people will lose interest in it, and then no one will want to hear about our product.”



the small Israeli startup. They expanded their operations, attended meeting after meeting with Microsoft and worked with the tech giant on implementing Redmond's own take on the software and hardware. One of their biggest challenges came in the form of Nintendo's Wii, which debuted in the US in November 2006.

"[The Wii] was close to what we're doing," Maizels recalled. "We were terrified. We thought, if it's a totally dumb experience, people will lose interest in it, and then no one will want to hear about our product. But if the Wii is great, maybe it's good enough and they don't *want* to hear about

our product!" Looking back on it, however, Maizels thought the Wii was actually a great thing for PrimeSense. "People couldn't articulate holding the controller." He believed their product could bridge that gap. "We have a technology that can see, but cannot be seen ... The gaming industry was searching for something unique after the Wii."

As it turns out, the Kinect did prove to be incredibly successful. According to the Guinness World Records, it's the world's fastest-selling consumer electronics device, moving more than 10 million systems by March 2011. Microsoft sold an average of 133,333 units per day between its launch on November 4th, 2010 and January 3rd, 2011, alone. The Kinect was a hit.

But by the end of 2010, PrimeSense was already looking beyond Microsoft. It partnered with ASUS to develop the Xtion Pro, which uses the same 3D sensor tech from the original Kinect, but exclusively for PCs. Another collaboration was with Eedoo, a Beijing company, which made a Chinese-only multimedia entertainment console that tried to use

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a time-of-flight (ToF) camera, but then chose PrimeSense's "light-coding" tech for gesture controls. In November 2010, it partnered with Willow Garage, maker of robotics applications, and Side-Kick, a motion gaming startup, to found a non-profit organization called OpenNI, or Open Natural Interaction. The goal of the foundation is to promote and support 3D apps by offering low-level hardware support and visual-tracking software to the open-source community. To that end, PrimeSense offered up its NiTE Middleware as a free open-source download, so that developers could use it to create their own 3D applications.

OpenNI has already led to PrimeSense implementations far outside the video game realm. For example, France's CRIIF (Centre de Robotique Intégrée d'Île-de-France) has used it on its SAMI robot prototype so it can detect obstacles and avoid bumping into things. A retail solution called Shopperception used PrimeSense sensors to analyze consumer behavior in retail stores. And a startup known as Matterport utilizes the tech to scan and render any room into a pre-measured 3D floor plan for easier interior design and furniture shopping.

"If you asked me back in 2005, 'Where do you see technology in seven years?' I would've said sensors would be everywhere," Berliner said. "My goal would be to make sure there's a sensor in every room in every house or office or mall. For example, when technology knows who you are and where you are, you won't need to ever enter your login and password ever again — it should already know you." Maizels told us the sensors are already in use in fitness centers in Europe, and he hopes to roll them out in senior centers to make it easier for caretakers to help elderly tenants — it would alert them if someone had fallen, for example.

Despite the early success of PrimeSense, however, it did suffer a bit of a setback in 2012, when the company laid off 50 of its 190 employees. Maizels explained it was attempting to change its product roadmap, to reinvent itself instead of "riding on the fumes of old technology." Which, it turns out, was a good move, seeing as Microsoft went with an in-house solution for the next-generation



PrimeSense CEO Inon Beracha proudly displays the company's latest product, the Capri, aimed at portable electronics such as tablets, laptops, mobile phones and robotics.

PrimeSense



Kinect. Still, Tal Dagan, PrimeSense's VP of marketing, had nothing bad to say about its former partner.

"The fact that Microsoft chose to continue investing in 3D and brought an internal solution is a testament to their commitment to 3D and to the success of the Kinect to date," he said. "We still believe that PrimeSense has the best and most advanced technology and 3D solutions in the market."

To that end, the company took a bold step forward last year when it debuted the aforementioned Capri, which it claims is the world's smallest 3D sensor. PrimeSense boasts that it has three times the depth resolution compared to its predecessor, with dimensions that are 10 times smaller and with 50 times better ambient-light resistance (the ability to work in daylight).

"The Capri is the future of PrimeSense," Dagan said. "Not only is it smaller, lower-power and cheaper, it also has better depth, better middleware that can actually run on a mobile processor ... our end goal is to make it small enough to make it into every consumer device."

An example Dagan gave was to use a Capri-equipped smartphone as something that can measure depth: "Instead of having to measure my daughter's height every two weeks, I could just take a picture of her with my smartphone, and it'll automatically know she's grown by a few inches based on her profile and previous height." He offered other potential ideas like a portable gaming device that utilizes motion gestures, a car-docked handset that sounds an alarm when you're nodding off to sleep mid-

"If you asked me back in 2005, 'Where do you see technology in seven years?' I would've said sensors would be everywhere," Berliner said.




drive or simply the ability to scan an object for a 3D printer.

Dagan said the company is working hard on pitching the Capri to OEMs, hopefully to have it integrated in upcoming mobile products. When asked if there were any specific challenges to selling the sensor, Dagan deflected. “As in any new revolutionary product, the challenges are great. Our challenge as the technology provider is to bring to the OEM a technology that will allow these new revolutionary experiences while being robust and low cost.” The company wouldn’t reveal any potential partners either, but they did say the Capri was small and flexible enough to be embedded into “any consumer device available today.”

As we wrapped up our interview at the airport, I asked Maizels what his favorite Kinect game was. He said he liked playing *Fable: The Journey*, but instead of describing the game, he digressed. “Right now, it seems that there are two camps: people who are hardcore gamers, and people who play Kinect ... But the experience should rule; there shouldn’t be two sides. Both should be catered to ... there shouldn’t be two separate demographics.”

“The world should aspire to not see technology in front of them,” he said, picking up his white Nokia Lumia 920 in demonstration. “People still have their thumbs on phones. We should be able to make things happen without needing people to think about technology. Things should just work ... If we could eliminate that barrier, lift that technology veil, it would change lives ... technology would be natural, you would be able to do things without even thinking.”

In all our interviews, Maizels kept returning to Isaac Asimov as an inspiration. He wants machines to be smarter, to evolve to the point where we no longer realize they’re complex creations, to interact with them in the most natural way possible. In some sense, we’re almost there, with touchscreens and hand gestures, but Maizels wants to take it a step further.

He wants his sensors to be so universal that it creates a “new way of living.” Perhaps it will. 

Nicole lives in San Francisco, where she cultivates a love for fog, baseball and craft beer.



ESC

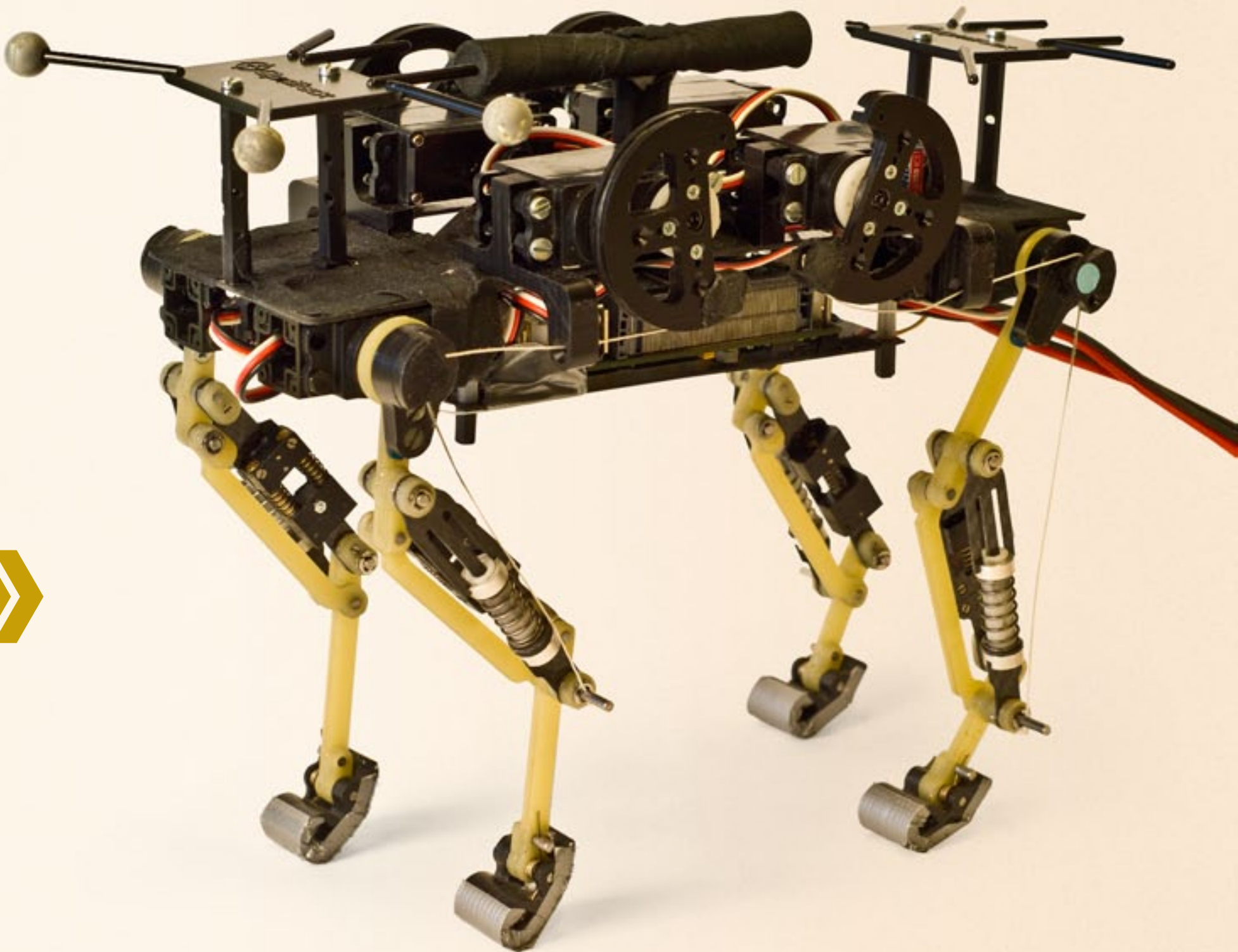
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VISUALIZED

**CHEETAH-
CUB**



See it in
action!



ESC

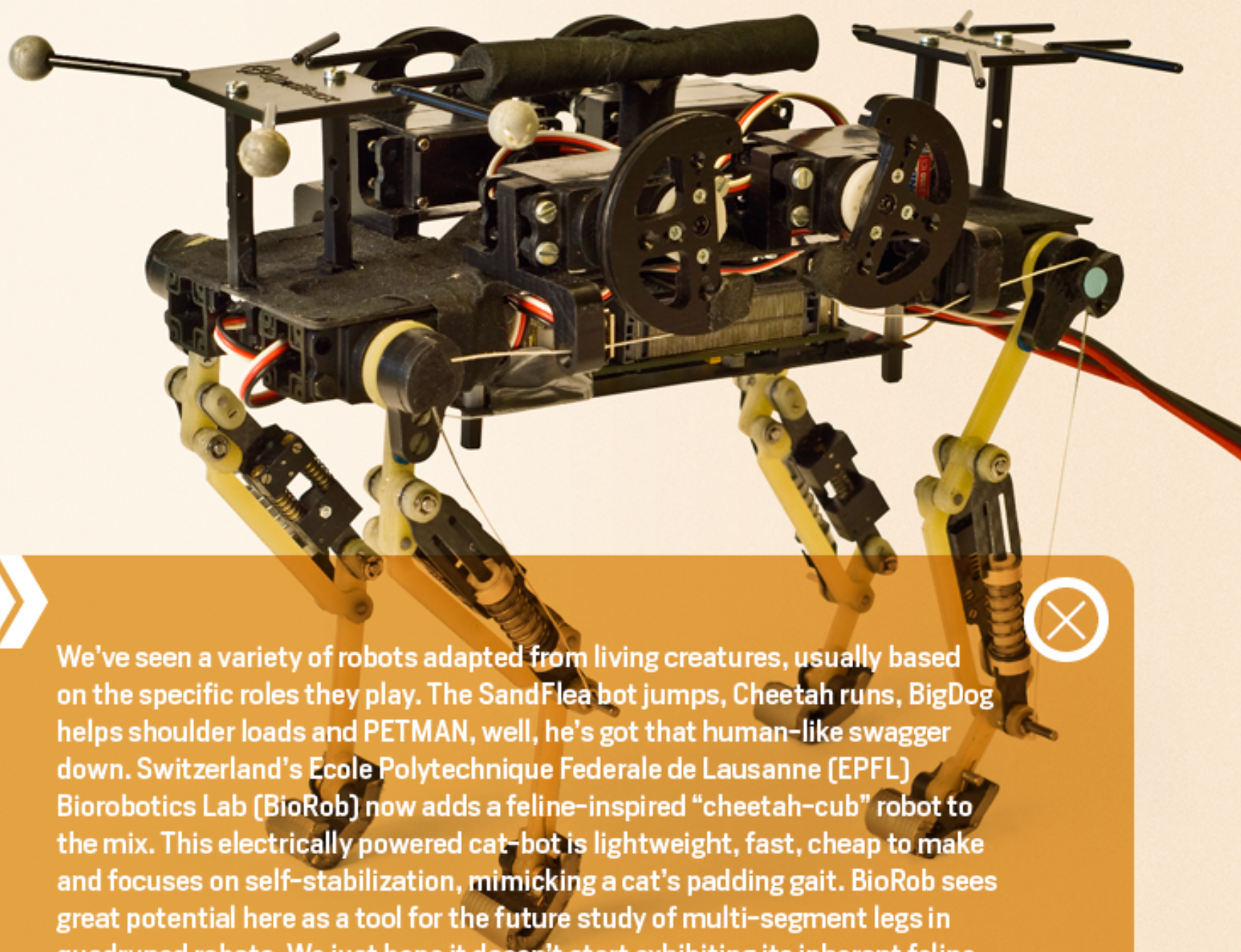
DISTRO
06.21.13

VISUALIZED

CHEETAH-CUB



See it in
action!



We've seen a variety of robots adapted from living creatures, usually based on the specific roles they play. The SandFlea bot jumps, Cheetah runs, BigDog helps shoulder loads and PETMAN, well, he's got that human-like swagger down. Switzerland's Ecole Polytechnique Federale de Lausanne (EPFL) Biorobotics Lab (BioRob) now adds a feline-inspired "cheetah-cub" robot to the mix. This electrically powered cat-bot is lightweight, fast, cheap to make and focuses on self-stabilization, mimicking a cat's padding gait. BioRob sees great potential here as a tool for the future study of multi-segment legs in quadruped robots. We just hope it doesn't start exhibiting its inherent feline traits of staring, napping and unrepentant cheezburger envy.



DANIEL HUNDT

HTC'S CREATIVE DIRECTOR
on the versatile smartphone
and responsible consumption

What gadget do you depend on most?
No question, my smartphone.

**Which gadget do you look back upon
most fondly?**
My gen-one iPod. I received it as
a gift at the end of my first in-



ternship as a designer in Portland. It was a new way to consume and manage my music, combined with great design. I remember being so worried about scratches on the perfectly shaped stainless-steel back housing. It was very precious to me at the time.

Which company does the most to push the industry?

I have to think of Google, which provides technology for the masses: we use its services and search engines almost unconsciously since it is so ingrained in how we live. I hope that we at HTC do this on a smaller scale in terms of user experience and design.

What is your operating system of choice?

Android.

What are your favorite gadget names?

I would say Walkman, Infobar and Instamatic.

What are your least favorite?

Anything with just an acronym and numbers.

Which app do you depend on most?

Besides email, it's navigation and Yelp. The best apps, you don't fully appreciate when you have them, but when you don't, you really miss them.

What traits do you most deplore in a smartphone?

The smartphone consumes you and becomes a habit. There is a fundamental question: does being socially connected all the time really enable you to be closer to people you care about? Is typing a message, status update or designating a "like" really more effective than a simple phone call?

Which do you most admire?

The endless possibilities, beyond peoples' imaginations. Through the creativity of users and developers, the smartphone can become anything you want it to be; that's why I am very lucky to work in this industry.

What is your idea of the perfect device?

No hardware at all — seamless and hardware-less communication through new display and communication technologies.

“There is a fundamental question: does being socially connected all the time really enable you to be closer to people you care about?”



What is your earliest gadget memory?

Probably my parents' record player that I was fascinated with and played with as a little kid. The analog and mechanical aspect of it had a very intriguing effect on me. Very unfortunate for the life expectancy of the device!

What technological advancement do you most admire?

Social networks and their vast social and political influence. Freedom of information is now available in places where it was not previously possible. This is a great thing, but poses more responsibility on each of us who consume and forward information.

Which do you most despise?

The information explosion over the last 10 years. We consume so many more meaningless things on a daily basis.

What fault are you most tolerant of in a gadget?

Maybe "fault" is the wrong word, but I am OK with sacrificing certain functions in order to improve and perfect the gadget's main cause: communication and consumption.

Which are you most intolerant of?

I am a hardware guy: poor build quality, meaningless and/or arbitrary design. This gives you the

feeling that companies didn't go the full way to give you the best possible experience.

When has your smartphone been of the most help?

It might have been the flashlight app on a camping trip. Very low-tech.

What device do you covet most?

At the moment I don't covet a device badly, but a white Leica M8 would be nice.

If you could change one thing about your phone what would it be?

One week of battery life, without impacting the overall dimensions of the phone. Unfortunately battery technology is not there yet.


What does being connected mean to you?

Productivity on the one hand, along with a certain amount of distraction on the other.

When are you least likely to reply to an email?

During a Niners game.

When did you last disconnect?

Other than on a plane or being out of battery, I can't even think about a time. I should plan for a smartphone and internet vacation though! 



IN REAL LIFE is an ongoing feature where we talk about the gadgets, apps and toys we're using in real life.

MOPHIE JUICE PACK PLUS FOR iPhone 5

SO I JUST GOT A NEW PHONE.

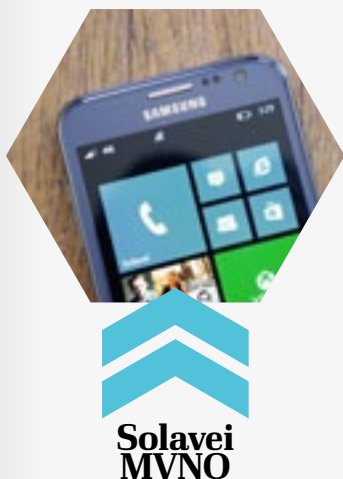
The fact that my employer's parent company wasn't offering up an HTC One or Galaxy S 4 is a conversation for another post. Instead, I've called you all here today to discuss cases. I'm clumsy; I'll cop to that. I mean, I've got some redeeming qualities, too, but I'm not above accidentally dropping a handset onto the cold, hard sidewalk while perfectly sober. I did it once to an iPhone 4, and it wasn't pretty. Drop that thing on the right corner and it shatters beyond recognition. For that reason, my last handset spent most of its life cooed inside an Otterbox — a big, bulky thing that failed to live up to all that life threw at it.

Naturally, I needed something lined up while my iPhone 5 was still en route, so I could seamlessly transfer the thing from one box to the other, with minimal exposure to the elements. (I was grimacing as the office IT guy slid the handset across a counter to me, scuffing up the shiny back in the process.) Think of it as a sort of decompression chamber, so your phone doesn't get the bends. We had Mophie's latest model lying around, so that seemed like a good fit. It's a bit chunky, but not un-

wieldy, offering sufficient bumpers for those Achilles' corners. Also, unlike much of the current crop of rugged cases, it doesn't look like it belongs on a tool belt. The curvy, matte design isn't as elegant as the phone itself, but it's not half bad to look at.

Really, the whole battery life thing was a bit of a bonus (though if you're going to shell out \$120 for it, it really ought to be a priority). That said, I can't remember the last time I made it through a full day on a single charge. Another unexpected bonus to the case: I can now charge up my phone with the far more ubiquitous micro-USB, always nice when I'm traveling around — which tends to be most of the time these days. Syncing, on the other hand, still requires iCloud or a Lightning cable, which in turn, demands you pull off the bottom of the case. The built-in speaker holes are a nice touch too, though the sound comes out more loud than clear. Don't expect to do most of your music listening with this.

All said, the case manages to make up for several of the iPhone 5's shortcomings. Now if only it could help make Gmail my default mail app. That'll have to wait for the next generation, I guess. — *Brian Heater*

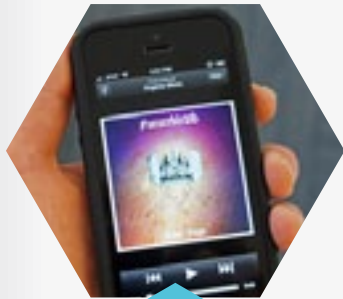


SOLAVEI

IT'S A BIT OF A JUNGLE out there in the world of Mobile Virtual Network Operators (MVNOs), and while joining one is usually cost effective in terms of service, getting a decent handset is a whole different matter. There's also the issue that most virtual operators lack LTE support and provide coverage that's often hit-or-miss. As a result, we usually recommend MVNOs built upon AT&T and T-Mobile

networks since these accept most unlocked GSM phones and offer "4G" (faux-G) HSPA+ data speeds in populous areas.

Solavei is one such virtual operator. The company uses T-Mobile's EDGE and HSPA+ network (no LTE) and partners with GSM Nation to offer a reasonable selection of AWS-capable, unlocked, unsubsidized handsets — some older (HTC myTouch 4G and Sensation XE), some newer (Samsung Galaxy S III and iPhone 5). Of course, you're welcome to bring your own unlocked GSM



**Mophie
Juice Pack
Plus for
iPhone 5**



“The schtick with Solavei is that for every three people you sign up directly, the MVNO pays you \$20 (up to \$20K a month apparently), so referrals are encouraged.”

phone as long as it's compatible with T-Mobile's bands (AWS support is recommended for best HSPA+ coverage, but 1900MHz works in re-farmed areas).

Service is month-to-month and contract-free — \$50 a month buys you unlimited nationwide voice, text messaging and data (though you'll get dropped to EDGE speeds after gobbling up 4GB). Additional pay-as-you-go rates are available for international calling. The schtick with Solavei is that for every three people you sign up directly, the MVNO pays you \$20 (up to \$20K a month, apparently), so referrals are encouraged. Of course, that's no different than businesses like Tupperware and Amway.

I've been using a Solavei device and SIM for several weeks now and it's been a mostly trouble-free experience. Network performance and coverage matches what we've seen on T-Mobile here in San Francisco, with excel-

lent HSPA+ data speeds in most areas (and the same annoying dead zones in some parts, like the Mission District). Ditto outside the city. My demo handset, a Samsung ATIV S running Windows Phone 8, came from GSM Nation and started life as a Telus device (judging by the pre-installed apps).

All told, I tried Solavei's SIM on several phones, some unlocked, some T-Mobile-branded, some AWS-capable, some not. Most picked up the APN settings automatically, and for the rest we just set it manually using T-Mobile defaults. All in all, I'd recommend Solavei as an alternative to T-Mobile's prepaid service with the caveat that virtual operator Straight Talk offers the same plan on the same network for only \$45 per month, minus the referral program, of course. I'll leave you to decide if that last part is for you. — *Myriam Joire*



The week that was in 140 characters or less

PRISM Fighters, Bot-on-Bot Action and Ghost Face Killahs

DISTRO
06.21.13

ESC

REHASHED

@jowyang

Thinking there's an amazing comic book to be written if Kimdotcom and John McAfee join superforces to oppose PRISM.

@MikeIsaac

makerbot
acquired
by larger
bot

@benjowns

If Hunter S.
Thompson made
software, he would
be John McAfee.

@Tim_Stevens

Sadly, Microsoft execs made themselves look bad trying to prop up this DRM policy as a good thing for gamers. The reversal won't change that

@jennydeluxe

i know i'm in the minority here, BUT - i'm totally okay with the fact that the redesigned snapchat ghost has no face

THE STRIP

BY SHANNON WHEELER



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ESC

TIME
MACHINES

WHAT IS THIS?
TOUCH TO FIND OUT



UNIVAC I SUPERVISORY CONTROL CONSOLE

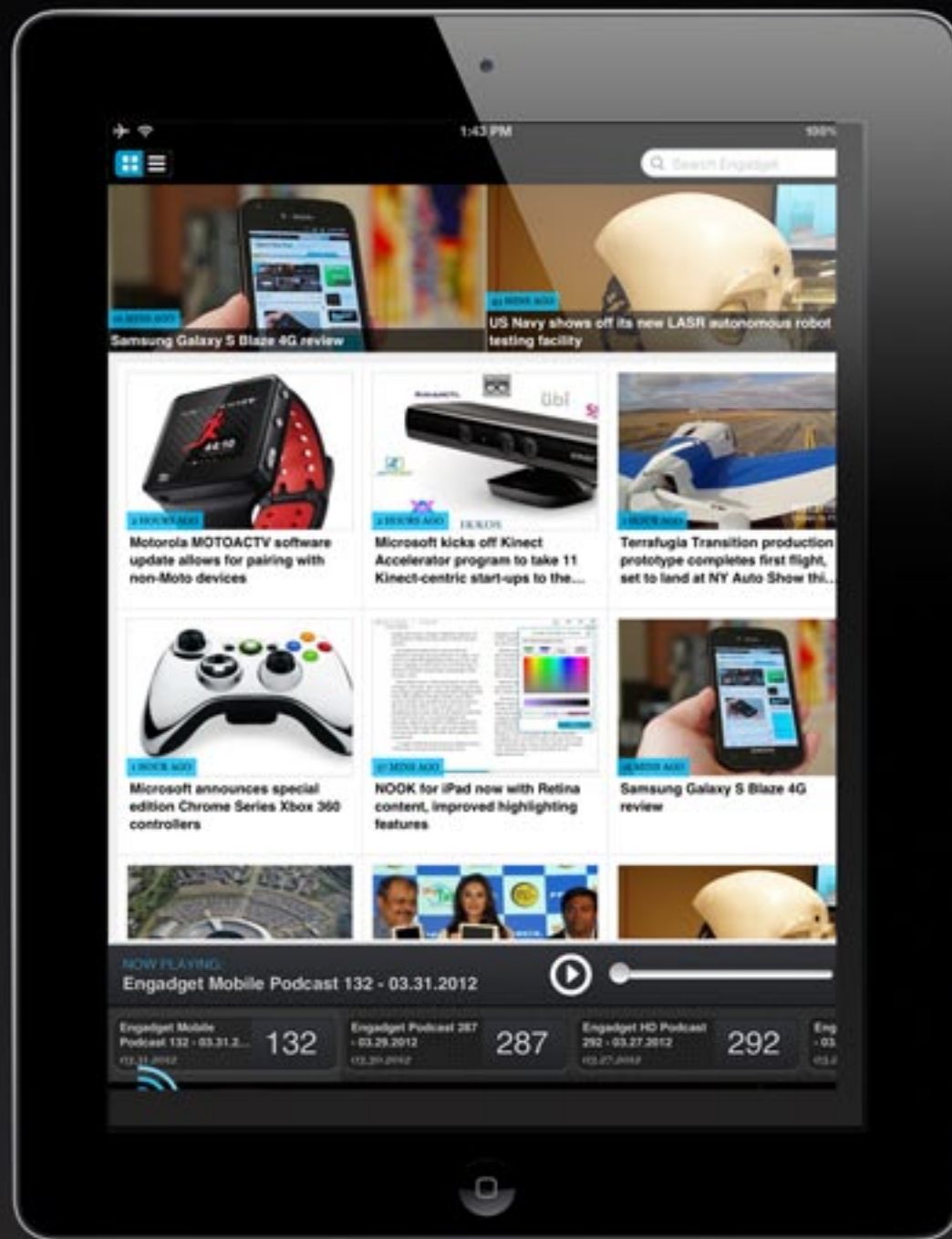


The UNIVAC I (Universal Automatic Computer) hit the market in 1951 when creators John Mauchly and J. Presper Eckert sealed a deal with the US Census Bureau to provide a statistical tabulating solution. This general-purpose number cruncher managed data via magnetic tape and had its own massive peripheral to control the operation. This “supervisory control console” gave its operator the power to start, interrupt and stop processes and was built to Death Star proportions. It was incorporated into an office desk and offered a vast array of switches along with numeric and alphabetic keyboards for sending instructions directly to the computer. You won’t find a monitor here, but the UNIVAC did have an optional oscilloscope add-on, which was often used for maintenance purposes. At the time, operators were usually highly qualified engineers familiar with the machine’s inner workings, but we certainly wouldn’t rule out an occasional PEBKAC issue.



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